COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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FTC Quietly Probing TRW Security Measures

WASHINGTON, D.C. – The Federal Trade Commission (FTC) has begun a nonpublic investigation of TRW Credit Data to determine whether the firm takes reasonable precautions to ensure the accuracy of its files.

Under the Fair Credit Reporting Act, firms are required to take "reasonable procedures to assure the maximum possible accuracy" of the reports they send out on individuals.

The investigation, which was confirmed by TRW last week, presently involves just TRW, but could be broadened to include the entire credit-reporting industry, sources said.

The FTC has not said why it began the inquiry into TRW, but it is apparently unrelated to the indictments handed down against six people last week for altering records in TRW's computerized files.

TRW keeps files on 50 million people, a spokesman said, adding that only 2% of its reports are challenged every year.

The total number of files that contain inaccurate or outdated information is open to some dispute, but in 1974 Ray Ybaben, currently vice-president of TRW Information Services, which runs TRW Credit Data, told a National Computer Conference audience that "only one-third" of the records contested by consumers were inaccurate or needed some update.

Ybaben said at that time that the firm received only 2,000 inquiries per year before the Fair Credit Reporting Act was passed requiring that individuals be notified as to why they were turned down for credit.

With the requirement for notification, he said, the inquiries had increased a hundredfold to 200,000 annually. "Only one-third" of those inquiries resulted in a file either being corrected or updated, he said then.

Last week a TRW spokesman con-

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Six Charged With Altering TRW Credit Data Files As FBI Breaks L.A. Ring

By Molly Upton
And E. Drake Lundell Jr.
Of the CW Staff

LOS ANGELES – Six people have been indicated here for manipulating credit-rating records kept in the nation's largest computerized credit data bank.

The indictment charged the six worked with an employee of TRW Credit Data to alter the records of 16 individuals, although TRW had previously warned banks and other credit granters the records of over 100 people may have been altered by the ring.

TRW collects and disseminates credit information on about 50 million individuals to its customers, which are credit granters such as banks, stores and credit-card companies.

The six indicted were allegedly aided in the fraud by a TRW employee, Kathleen Bennett, who, according to the indictments, actually altered the records. Bennett was a clerk in the consumers relations department of the firm.

When the scheme was uncovered TRW dismissed Bennett, who is now cooperating with the investigators, according to Frank Keer, a district attorney prosecuting the case.

Tip-Off Not From TRW

The initial tip-off of the scheme was given to the Federal Bureau of Investigation, he added, and did not come from TRW itself.

While prosecutors would not say where the original tip came from, reportedly an individual who had been approached in a bar and offered a clean credit slate for $600 first contacted the FBI.

Allegedly the six men charged people with bad credit ratings a fee to alter the records – either to delete derogatory credit information or to add favorable information to the files.

Under the Fair Credit Reporting Act, each company that sells credit information, like TRW does, must have a consumer relations department to investigate complaints from consumers about their credit reports.

Bennett, according to the indictment, was just a clerk in that department, but she was still able to enter information into the system. In at least 16 cases detailed in the indictment, she used her position to either delete or add information to existing files, the indictment said.

"She would send items into the system,

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Schaefer Alleges Negligence

Beermaker Sues EDS for $115 Million

By Toni Wiseman
Of the CW Staff

NEW YORK – The F.&M. Schaefer Brewing Co. has filed a suit against Electronic Data Systems Corp. (EDS) alleging gross and wanton negligence and breach of contract in a facilities management and software development agreement between the two firms.

Schaefer is seeking a total of $115 million, including $45 million in actual damages and $70 million in punitive damages.

The suit came as a complete surprise to EDS, according to a management statement, which added EDS was "unaware of any basis for the claims described by Schaefer."

From 1964 to 1968, Schaefer ran its own DP department with 24 employees and two leased IBM 360/30s. Coincident with a reorganization plan, the firm developed a five-year plan for DP to provide for growth and, in particular, for utilization of past sales histories in forecasting future sales and redesign of existing software for more efficient operation.

In January 1969, Schaefer hired EDS as an outside consultant to review, analyze and report on the DP plans and ongoing DP operations, according to the court brief.

Current Software Inflexible

EDS' report stated current software was inflexible and advised that the development of any new software, particularly for short-range forecasting, would require experts.

EDS, the brief said, undertook a detailed examination of Schaefer's present and future DP needs "without remuneration or contractual obligation."

This ended with the recommendation that Schaefer "should terminate or reassign all of its data processing employees and utilize an outside contractor such as EDS for its data processing needs."

It also claimed a short-range forecasting system could be developed and implemented by EDS within 12 months, the Schaefer brief stated.

The suit charged EDS' advice was negligent because it failed to provide for adequate applications knowledge of Schaefer's particular needs to remain resident during the period of development of the new system.

The brief further alleged that "the system EDS undertook to design . . . was improperly designed in that it failed to interrelate the subsystems of Schaefer and was poorly and inadequately documented, or not documented at all, and, in fact, was substantially a copy of the system previously used by Schaefer which EDS had stated was inadequate for planned future growth."

EDS also failed to set up a realistic implementation time schedule, the suit claimed.

As a prerequisite to any contract between EDS and Schaefer, Schaefer had to agree to turn over all of its existing

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Ford People Prepare For Campaign Trail With Automated Lists

By John P. Hebert
Of the CW Staff

WASHINGTON, D.C. – The behind-the-scenes computer-room support work for President Ford's direct telephone campaign for the upcoming November election is about 95% completed.

The National Republican Congressional Committee (NRCC) has processed identification data on 35 million to 40 million voters by party registration. The list is current as of July, when this year's presidential primaries ended, according to Murray Dickman, director of the Computer Services Division of the NRCC.

Last week, NRCC had election results from primaries in 48 states representing results from about 150,000 precincts, Dickman said. (California is one of the two missing because of the late-year primary.)

Even though NRCC's Computer Services Division has no computer system it can call its own, the organization gathers in-

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Independents Protest FCC Call For Data on Bell Bill Lobbying

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – Independent telephone companies have launched vigorous objections to a request from the Federal Communications Commission (FCC) for data on lobbying efforts related to the Consumer Communications Reform Act of 1976.

The requirements "constitute a blatant abuse of authoritarian governmental power," according to the U.S. Independent Telephone Association (Usita).

The FCC's request for financial data on lobbying efforts "tends to intimidate the recipient companies and tends to infer to all companies that the FCC believes legal and legitimate political action is wrong and improper," Usita said.

"This is purely and simply a fishing expedition," Usita wrote in comments sent to the General Accounting Office (GAO) about the FCC request.

In June, the FCC initiated efforts to require an accounting of funds being spent by the telephone industry in support of the Bell-fostered Reform Act, now pending before Congress.

One of the affected phone companies appealed to the GAO for a review of the accounting and reporting details being requested by the FCC. As a result, no lobbying data has yet been provided to the FCC.

The GAO entered the picture under terms of the Federal Reports Act, which allows it to approve conditions set up to report financial information by companies to regulatory agencies.

The act allows the GAO to determine only that the reporting procedures do not establish an unnecessary burden on the regulated companies, but it does not empower the office to rule on the need for the information, a GAO spokesman said. The FCC determines whether the information is needed, he added.

Despite this limitation, Usita has told the GAO its members strongly oppose the

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Schaefer Asks $115 Million From EDS For Negligence and Breach of Contract

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software and documentation, its data base and full control of its DP system, the brief alleged.

The firm also agreed to be deprived of access to the documentation, systems design and any other material developed by EDS during the development process and for seven years thereafter.

Under the terms of the May 1969 contract, Schaefer agreed to pay EDS $67,309/mo to run the then-current DP system and $112,500/mo to run the new system once developed, as well as $3.5 million amortized over 84 months for the development and continuing right to use the new system.

By April 1970, some 36 EDS employees were situated full-time at Schaefer, running the existing DP operation and programming the new one. During May of that year, they tested a short-range forecasting subsystem, the brief claimed.

Implementation of the subsystem revealed "inaccurate information being produced in that forecasted sales figures for customers were neither supported by past histories nor by subsequent results achieved," Schaefer's filing charged.

EDS said the inaccuracies were due to incomplete implementation, the suit claimed.

From January 1971 through July 1972, EDS implemented seven subsystems including personnel, distribution, load-balancing, production planning, sales reporting, order entry and budgeting.

Inadequate Systems Development

The systems development was inadequate because there was inadequate editing, inadequate or no controls, inadequate or no documentation and inadequate testing prior to implementation with a resulting destruction of accuracy of the data base, the suit charged.

During that same period and thereafter, EDS "fraudulently concealed the deficiencies and inaccuracies" of the systems, the suit claimed.

"Furthermore, due to the terms and conditions [of the contract], Schaefer was precluded from discovering such deficiencies and inaccuracies," Schaefer said.

In December 1972, EDS claimed that "Phase I – Preinstallation" was completed and all subsystems were programmed and operational, it continued.

The suit also alleged that from April 1970 through August 1974, on different occasions, "EDS fraudulently concealed the inadequacy and inaccuracy of its software . . . by knowingly failing to disclose or misstating the true facts to Schaefer with the intent and purpose of inducing Schaefer to continue in its contractual relationships with EDS."

EDS created falsified "control figures" to hide the fact that the system, if operated, did not balance and produced discrepancies, the brief claimed.

Various Discrepancies

As a result of misrepresentations, Schaefer said, it suffered from numerous DP problems including incorrect W-2 forms, an unbalanced operating budget, erroneous invoices and customer statements, a 1972 payroll understated by $1.8 million, overtime overstated by $6 million and incorrectly updated accounts payable files.

These and "various other discrepancies, inaccuracies and misleading information were produced by the computer system, which made it difficult for Schaefer to remain in business," the suit claimed.

In May 1974, EDS and Schaefer began discussions concerning the termination of their contract and, in December of that year, Schaefer informed EDS of its intent to terminate at the earliest possible time because of unsatisfactory results on EDS' part.

In May 1975, EDS began partial delivery of various documents, flowcharts and program listings to Schaefer. Deliveries were to continue until Aug. 28, 1976.

During August 1975, Schaefer personnel, in attempting to utilize the programs and subsystems delivered by EDS, discovered the subsystems were inadequate, poorly documented, inadequately tested "and were materially deficient in all respects," the brief stated.

Schaefer further discovered EDS had been maintaining a report since 1971 which indicated that amounts of goods sold under the load-balance subsystem did not equal the amounts shown on the order entry subsystem. These discrepancies had occurred on a daily basis since initial operation of the subsystem in 1971, the suit claimed.

Similar discrepancies were discovered in the financial system, Schaefer said.

Schaefer suffered damage in delay in creating a functioning and accurate system, thereby rendering the firm unable to market its goods, gain new customers and gain the benefit of decreased overhead and increased efficiency, the suit alleged.

The suit asked for the return of all monies paid to EDS. In addition, it seeks $8 million in order to enable Schaefer to create a new DP system; $1.9 million in cost of transition from the EDS system to Schaefer's own DP department; and $1 million for excess operating time during the period of transition (while the EDS system has to be operated with double checks and redundancy).

EDS, which claimed it first learned of the suit through a press release issued by Schaefer, said it "views the filing of the litigation as a tactic to attempt to avoid the payment to [EDS] of an amount exceeding $1.2 million owed [EDS] by Schaefer."

EDS plans to assert its own claims against Schaefer "in an effort to collect all amounts owed [EDS] by Schaefer."

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Ah, it's a real pleasure to compete against IBM's software division. Take the recent tryouts for the "Sorting Olympics of 1976," for example.

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Next, just to make certain that everything was really on the up and up, IBM dispatched one of their technical people to serve as their representative.

Then IBM did the finest thing of all. They sent their own "stopwatch." This was an MF-1 monitor, designed especially to evaluate systems performance on MVS. It was, they told us, accurate as a pawnbroker's eye. That was fine with us. We're scientists, too.

Finally, the moment of truth came. The tests were run . . . the observers gathered round to examine the still smoking results . . . and guess what?

SyncSort III-and-half won everything! IBM's MVS/MF-1 said so. And who are we to argue?

The results are pictured below. Please remember that in a "sorting olympics" the winner always stands on the lowest platform. And that's where SyncSort stood all day while the Whitlow anthem was played again and again.

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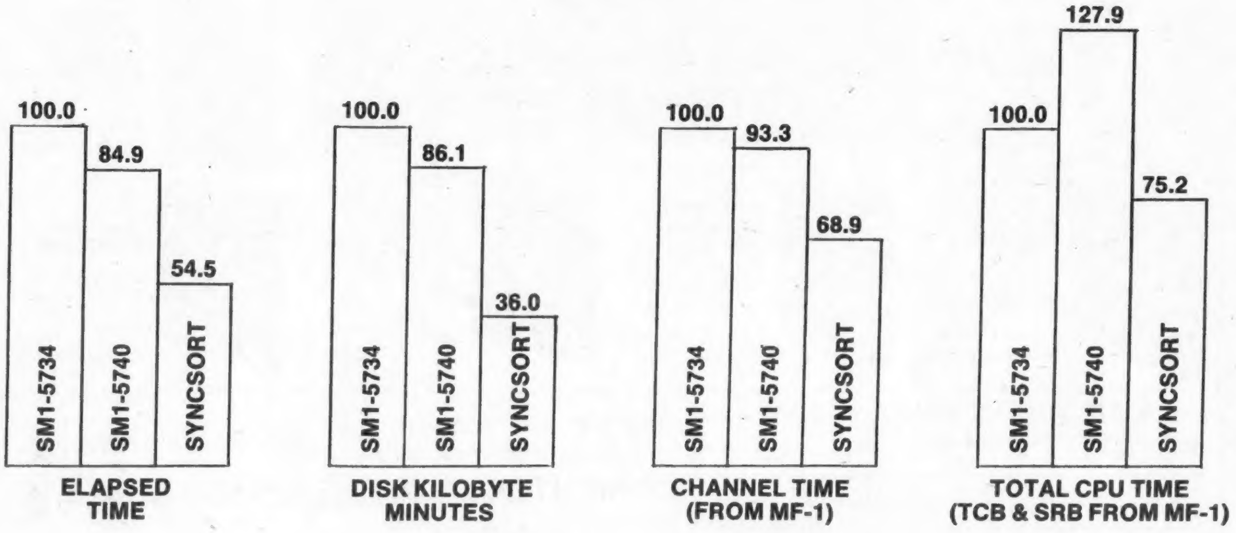

Should IBM be discouraged? Not in the least. The difficulty is that the computer giant is competing in the wrong events. Maybe he ought to stick to events where weight and muscle are prime requisites for success. The hardware throw, for example.

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Six Charged With Altering TRW Credit Files for Fee

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which would cause false data to be entered," Keer said the indictment charged.

The whole operation, he said, did "not take a great deal of intelligence" in order to be successful and showed any system has "weak points."

The men in the ring charged anywhere from several hundred dollars up to $1,500 for the service, the indictment said. Bennett reportedly received $50 for each alteration.

The prosecutor said it was hard to get cooperation from people who had used the ring to change their credit ratings since all those people were technically in violation of the law also.

The prosecutors therefore settled for the 16 cases where they felt they had a good case, instead of checking the over 100 cases in which TRW warned banks and others there might be a possibility of fraud.

The prosecutors could not estimate how much credit might have been granted to people who had used the ring to get their records changed, but "we entered the case early enough to cut off a lot of losses," Keer said.

Other sources, however, estimated the losses at up to $1 million.

The indictments cover actions during the period from Aug. 1, 1974 to March 29, 1975.

Just a Local Matter

TRW tried to play down the whole case last week; a spokesman claimed it was just a local matter since all the people involved were Californians, even though they were indicted on federal charges.

In addition, he said "our security procedures have always been, we believe, excellent and effective. The kind of thing that occurred a year and a half ago has long been corrected and could not reoccur."

He declined, however, to give details of any new security arrangements.

Both the federal investigators and TRW noted the firm had cooperated fully with the investigation, even though the company did not bring the alleged fraud to the attention of the investigators.

The six men named in the indictment – Philip and Paul Kostoff, John R. Dubos, Kenneth Stevens, Ronald Rossi and Sean Shanahan – are scheduled to go on trial here Sept. 28, but there is a strong possibility their lawyers will ask for a delay before that time, according to court sources.

They were charged with conspiracy and making false statements in loan applications.

TRW's credit services are operated with the aid of two IBM 370/158s, a 370/155, about 380 Datapoint terminals, 2,000 teleprinters and 100 Raytheon CRTs.

FTC Investigating TRW Security

(Continued from Page 1)

firmed that 33% of the inquiries still call for a record to be updated to some extent. At present, he added, 2% of the reports issued by TRW are challenged.

Regarding the FTC investigation, the TRW spokesman said "this is a nonpublic investigation and we believe it should remain nonpublic as it was intended to be.

"To us it's not unusual to have the FTC conducting this type of investigation. It is chartered to enforce the Fair Credit Reporting Act, and it's just doing business as normal as far as we're concerned," he added.

"We don't believe the investigation is going to lead to any significant results. As far as we're concerned, we're in full compliance with the law. Our measures and our standards have been the highest in the industry . . . We've always gone beyond the letter of the law in operating policies and procedures," he said.

While the TRW spokesman saw nothing unusual in the FTC investigation, others in the firm apparently have, since it has reportedly filed a motion with the commission to quash a subpoena issued by the FTC for its records.

The firm reportedly said some of the FTC demands violated confidentiality, are not relevant and are burdensome.

If the FTC finds TRW does not take reasonable precautions in protecting the accuracy of credit data, it could find the firm in noncompliance with the Fair Credit Reporting Act and order it to implement new methods to ensure accuracy.

Independents Protest FCC Request for Data

(Continued from Page 1)

FCC financial requirements.

The FCC staff said it had received inquiries from members of Congress about the amount of money being spent by the telephone industry in supporting the Reform Act, Usita told the GAO.

"Conducting a survey of this type merely to respond to a congressman's curiosity or anticipating congressional committee requests does not appear to serve a justifiable governmental or FCC need," Usita said.

The FCC request will place a burden on the independent phone companies to set up additional accounting procedures, the association said. "There is neither time nor any reasonable way for this association to determine on a company-by-company basis the additional man-hours and expenses required to meet the FCC instructions," Usita said.

"The FCC is causing exactly what it claims it is trying to prevent – additional costs to the ratepayer," the letter said.

An AT&T spokesman said the Bell companies basically intended to comply with the FCC request for quarterly accounting information on Reform Act lobbying.

The Usita reference to requests for information from congressional committees may be related to Reform Act hearings scheduled to start this month before the House Subcommittee on Communications.

Among organizations scheduled to appear at the hearings are Tymshare, the Independent Data Communications Manufacturers Association, Service Bureau Corp. and the time-sharing section of the Association of Data Processing Service Organizations.

DP Work Now 95% Completed

Ford People Readying Campaign With Automated Lists

(Continued from Page 1)

formation for three data bases, updates them regularly and makes the information available to all Republicans running for office, Dickman said.

The "unbelievable data collection job," directed from NRCC headquarters here by an 11-person team, is a year-round event. The computer end of the business of getting Republicans elected is, however, really a seasonal job, Dickman remarked.

Most of the work is done in June, July and August, he said, adding that is the time of year when everybody at NRCC screams and yells, whether things are going all right or not.

Name and Number Correlation

For instance, in the last two weeks of August, 20 million voters' names were matched with telephone lists with the help of an IBM 370/158, a 370/165 and 10 IBM 1403 printers working around the clock at the large Midwestern computer services bureau which NRCC uses for large-scale processing.

But that operation is really only one-third of the entire computer effort, Dickman said, adding it is where most of the $750,000 budgeted to the division is spent.

There is also a local firm from which NRCC buys computer time, he explained. Here, NRCC uses its own staff to execute NRCC-written programs on the firm's IBM 360/50 in preparation for the runs.

A third firm handles the intermediary work of standardizing information gathered through the organization's data collection effort, Dickman said. Although it is a small firm with a small machine – an IBM 360/40 – its employees have political experience, understand the tapes NRCC gives them and know how to format the data.

In addition to the political aspects, NRCC has its own Microdata Corp. Reality minicomputer which it primarily uses for administrative purposes like bill paying, Dickman said.

National Telephone List

NRCC obtains a national telephone list with 53 million phone numbers and names to compile the voter registration lists. There are three different direct-mail companies which sell the lists and updates to them, he noted.

NRCC voter registration lists come from larger counties in each of the 50 states, Dickman said. The lists are usually on cards and tapes, but they are all formatted differently.

Since there are no standards for the information coming in from about 400 separate sources, the 360/40 is needed to correlate voters' names with their telephone numbers, he said.

"And, when dealing with 35 million to 40 million names and 53 million telephone numbers, we will have incomplete information," he added. In these cases, NRCC attempts to complete the information only for larger counties.

When the information is standardized and processed, it is placed on computer printouts, or "walking lists," he noted.

The walking lists are the final form for the information stored on NRCC's three data bases which can be used by campaign workers to identify voters.

When the campaign workers place a phone call to one of the 53 million on the list, they ask the person which candidate will get his vote. If the answer is "Gerry Ford," the worker will try to get him to donate either time or money to help with the direct telephone campaign, Dickman said.

NRCC hopes to make 43 million telephone calls before the November presidential election to "develop a list of favorable Republican voters" as long as possible before the election, he explained.

After the election, NRCC will update the list by hiring a huge keypunch operation, he said.

"The advantage of the NRCC operation is that it is an information clearinghouse for Republicans running for public office. It eliminates all duplication of efforts because the Republicans can come to us for the information they need," Dickman explained.

The role of the Computer Services Division is to help the candidates by supplying very basic information, such as where the heavy concentrations of Republicans reside, he said.

Dickman called the operation "more successful than the Democrats' operation because it has been done much longer" – this being the tenth year.

NRCC raises money privately, with about 95% of the $9 million taken in this year coming from 750,000 small contributors who donate $25 or less, he noted.

This money is the bulk of the support for NRCC's 210 salaried employees at the headquarters near Capitol Hill, he said.

38% of Candidates Pass 1976 CDP Exam

CHICAGO – Almost 38%, or 929, of the DPers who sat for this year's Certificate in Data Processing (CDP) examination successfully completed the test, according to Fred Harris.

Harris is president of the Institute for Certification of Computer Professionals, which administers the test.

The 38% figure was a four-year high, Harris noted, and was an indication "the individuals taking the test have a much broader scope of knowledge and sophistication in the computer arts and relevant information" than previously because "the exam isn't getting easier."

The ICCP will make a cash award of $500 to the person who took the test for the first time and achieved the highest score.

"Awards for Excellence," consisting of a certificate and CDP key, have been given to those scoring highest in each of the exam's five sections (See story on Page 14).

MRI Head Cites Document Demands

Justice Witness Charges IBM Abused Legal Process

By Edith Holmes
Of the CW Staff

AUSTIN, Texas – A large, well-heeled company like IBM can distort the legal process, according to Robert L. Brueck, president of MRI Systems Corp. and a recent witness in the trial of the U.S. government's antitrust case against IBM.

And, in Brueck's opinion, IBM not only can, but has abused that process in U.S. vs. IBM.

MRI, a software and consulting firm here known particularly for its data base management system, System 2000, is one of many companies involved in this litigation on behalf of the government or IBM as a nonparty.

Slated to be a witness for the Justice Department in the "bundling" or single pricing aspect of its suit against the corporation, Brueck – and MRI – were subpoenaed last December to produce various files to the attorneys for the defense.

IBM's need for these files and the documents in them was "overstated," the MRI president said. Harassment by IBM has occurred because the document demands appeared "well calculated to burden our company with considerable expense, including tying up management time," he added.

Brueck noted he couldn't say anything about IBM's intent in levying such an extensive subpoena on MRI. He didn't know whether IBM counsel was just trying to do the best it could for its client or if its client has an interest in MRI beyond this suit which it plans to further through the case.

At the same time, he stated, "I firmly believe the parties are working in the system – professionally for the most part – to perform their particular roles."

But any time a corporation is as large and as financially well-off as IBM is, there is potential for misuse of that position, Brueck added.

If a company is big enough, it can justify spending large amounts of money for a case like this; it can offer aggressive, talented legal counsel and an almost unlimited budget with which to try to win the suit, he said.

"It remains to be seen whether MRI lost anything by permitting IBM counsel to look at the documents," Brueck stated. "If we catch any of those people allowed access to the MRI documents violating the specifications of the protective order [established by the federal district court hearing the antitrust trial in New York City], we will prosecute vigorously and to the fullest extent of the law.

"If those with access to these materials are smart, they will take the rules and protections governing them very seriously," he continued. If there are any leaks, he said he might run a big ad offering a reward for information leading to their origins.

Stalling Tactics

While the MRI documents were subpoenaed by IBM at the end of December, the Texas company didn't begin producing its files until it was ordered to do so late in the spring by Judge David N. Edelstein, who is presiding over the trial.

Production wasn't completed until June and Brueck didn't take the stand until mid-July.

MRI went through its own legal maneuvers to delay the IBM discovery as long as possible, beginning by first appealing the subpoena to the U.S. District Court for the Western District of Texas. Brueck and MRI later asked Edelstein to quash the subpoena, but the judge denied this request.

Brueck contends the time taken in the months between the time the subpoena was first filed and the date he actually took the stand was necessary to establish the rights of the parties involved.

In addition, MRI needed time to produce the documents, he said. Thousands of files had to be reviewed by MRI as part of its legal duty as the subpoenaed party; several hundreds of thousands of pages of documents were produced and these were copied by IBM, Brueck stated.

Few Documents Entered

In the end, very few of these documents were actually entered into evidence. MRI's counsel was in the courtroom for the better part of Brueck's testimony, and the company president credited much of MRI's ability to protect its confidential documents to the work of its outside attorneys.

Based on his experience in court, Brueck said he thinks judges responsible for cases of this kind need some form of special assistance to resolve procedural problems like those that came up with the documents in his testimony. Whatever form that special help takes, he added, "it should hold weight in the law."

The federal rules governing civil cases like U.S. vs. IBM could be augmented to provide support for the trial judge that would benefit the parties and the nonparties involved as well as the court, Brueck added.

Md., Va. HIS Users Form Group for H66/6000 Sites

BALTIMORE – Twelve large systems users in Maryland and Virginia have formed the Mid-Atlantic H66/6000 Users Group for users of that Honeywell Information Systems (HIS) computer series.

The group plans to meet five times a year. Each meeting will feature three technical presentations and an informal round-table discussion, according to Gerald M. Bull, corresponding secretary of the group.

Channels to Vendor

Besides serving as a communications channel for the members of the group, "we intend to make communications with both HIS and the National Honeywell Large System Users Association more effective," Bull said.

Additional information is available from Bull at Peterson, Howell & Heather, Inc., P.O. Box 2174, Baltimore, Md. 21203.

VA Says Target System Meets Privacy Act Demands

By a CW Staff Writer

WASHINGTON, D.C. – With security one of its priorities, the Veterans Administration (VA) is developing a data base-oriented system called Target to automate the claims-processing activities of its Compensation, Pension and Education Program.

The system, which has received criticism from privacy proponents, meets the requirements of the Privacy Act of 1974, the VA said.

"The focus of Target security is based in large measure on procedural and applications software development provided by the VA," the agency said, so the vendors are not being asked to provide a turnkey security system.

With the system, local regional offices will be able to manipulate, store and retrieve live claims file data and to immediately exchange and modify this data through communications with other files containing original source data or master record information, the VA said.

The system will maintain a work-in-process file with automatic follow-up features, allow on-line award processing, provide quick answers to inquiries on benefit claims and exercise greater control over accounts receivables, appropriation accounting and audit functions, the agency said.

The system should reduce claims development time and get initial benefit checks to veterans faster, the VA said. The agency expects to save millions of dollars annually by eliminating the present off-line batch input function and its related payroll.

Target will connect regional and central files as well as access information from the Beneficiary Index and Records Locator files, the VA said.

The system is envisioned functioning on a regional basis, with multiprocessors in three regional DP centers supporting intelligent terminals in 56 regional offices.

There will also be a Target Central System for data base maintenance, as well as centralized reporting and accounting functions and a computerized index of beneficiary information.

The Target Central System and the first regional DP center are scheduled to be operational by December 1977, with the other centers up by mid-July and October 1978.

Before issuing requests for proposals (RFP), the agency incorporated into its specifications several features discovered useful during pilot projects in Philadelphia, Baltimore, New York, Washington and Los Angeles.

Passwords and Badges

The vendors will supply interconnections to the VA software with their operating system, data base management system and transaction-processing system, the VA said.

"This will facilitate checking of the personal passwords and magnetic badge passwords originating at the regional office for authorization to use commands and data base records related to personal data," the agency stated.

The VA is investigating the need for encryption of data. It has asked the General Services Administration for authorization to procure data encryption devices to be installed should this be necessary.

In addition to specific security measures, the system will include several that are applicable to any area where security may be a factor, the VA said. These include:

- Taking audit trails on every data base update.
- Performing spot audits both of files and the original letters.
- Randomly selecting cases for quality review.
- Reviewing reports from the work-in-process subsystem for discrepancies.
- Reminding users that security measures are in effect and violators will be dealt with in the appropriate manner.

Varying according to the specifics of the data being handled, security measures will include encoding data, restricted commands for master updates, violations logs and elimination of unnecessary reports.

Terminal Precautions

Security against unauthorized use will include several controls aimed at the terminal user. An internal security code unknown to the user will control access, the VA said.

In addition, access to sensitive files will require special authorization. Operator passwords will be changed, violations reviewed by security officers and log-ins made of inquiries to the sensitive file as well as of updates to the security file.

There will also be precautions designed to limit programmers' access. Source modules will have unique passwords, and highly sensitive modules will be protected by a management code.

In addition, supervisory authority will be required through the regional DP center console operator to replace a module, and special audits of codes will be performed on highly sensitive modules.

Auditors, whose access will be controlled by security officers, will read code of sensitive modules.

Practicing What They Preach

ATLANTA – In an effort to practice what they preach, the higher-ups of the Urban and Regional Information Systems Association (Urisa) had an on-site computerized registration and information system to make their lives easier at Urisa's conference here recently.

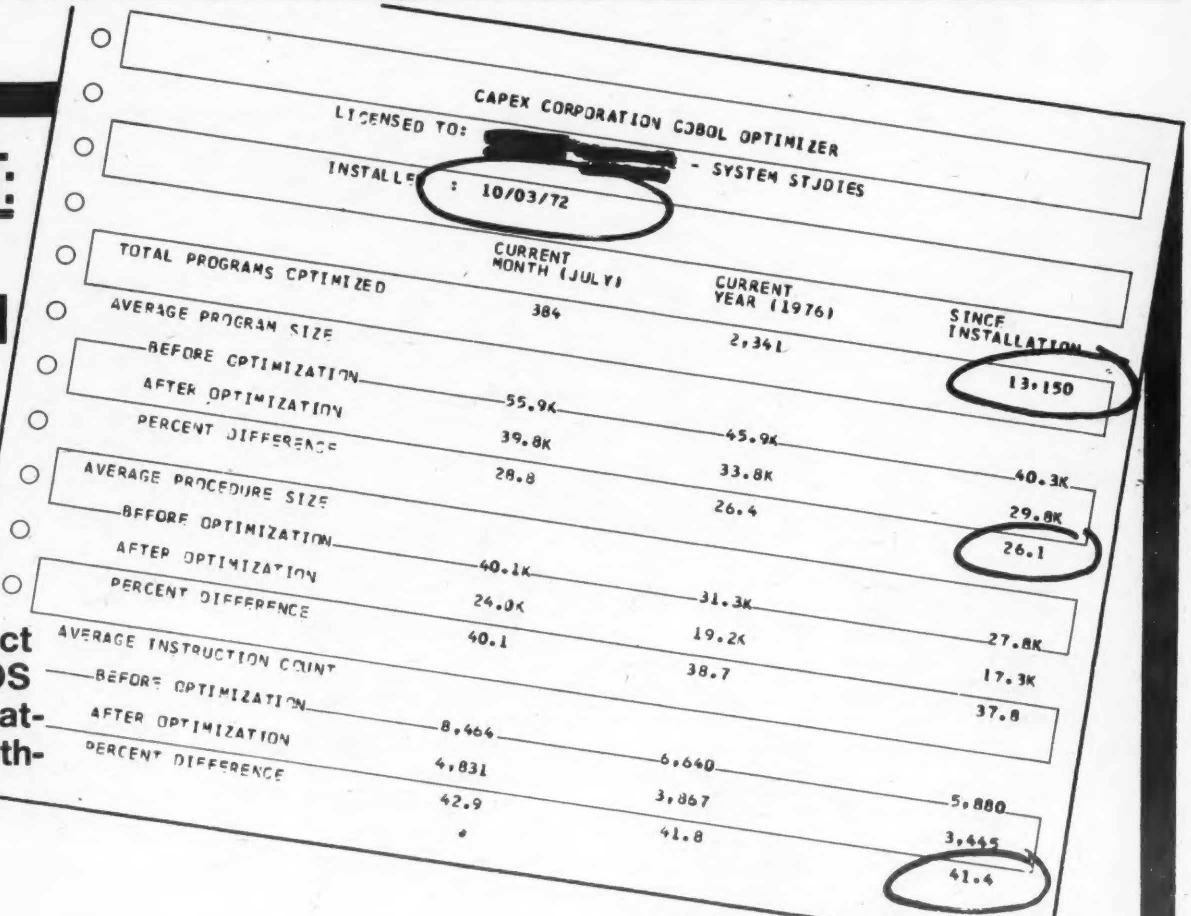
The system, which ran on-line to an IBM 5100, was touted as the "first portable computerized registration system to date for small conferences."

Karen Meals, assistant executive director of Atlanta-based American Institute for Decision Sciences (Aids), said the system allowed a conference to come on-scene to a city where temporary employees were unfamiliar with registration data procedures.

The functions of the system used by Urisa included an alphabetical listing of registrants, identification of members' hotel accommodations (in order to reach them if necessary) and cross-reference listings to verify attendance and bill-paid status, Meals said.

Cassette cartridges held all the data on the 5100 system. A booklet of proceedings and receipts for attendees were printed on an IBM 5103 printer.

The system in use at Urisa had a capacity for data on 1,200 attendees – more than enough power to process data on the 643 who showed up – and Aids/Urisa could have expanded that capability with an additional disk, Meals said.



Two Sides Presented on Citizen Information Systems

By John P. Hebert
Of the CW Staff

ATLANTA – Should computers be used in citizen information systems?

That question was asked of persons attending the Urban and Regional Information Systems Association (Urisa '76) conference by a five-man panel of educators and legislators, here recently.

At a Urisa session entitled "Information Systems as Services to Citizens" some on the panel sided with the argument for increased use and some argued against, but all of them asked attendees to think about the effects – good and bad – of using computerized information systems.

"Information systems are all around us, but there is poor utilization now," William Hanna, mayor of Rockville, Md., told attendees.

"All ideas for 'systems' are feasible," he continued, "but do we want to do it? Do we want to pay for it? Technology has to be used and technology is not cheap," Hanna said.

"For [computerized] information services now and in the future what the citizen will get and what he will pay for it will have to be evaluated in terms of what the system is worth to him," Hanna remarked.

Projecting the knowledge of each other's business and lives as the probable end result of widespread use of computerized information systems, Hanna said. "I don't think everybody wants to be involved in everything and, therefore, sophisticated information systems are not a necessity."

In the realm of recreation and public works, for instance, the present systems do a pretty good job and there isn't a need for information systems to any great extent, he added.

"Let's look ahead to something that is going to be needed and not an unnecessary waste of energy."

Argument Reinforced

Nathan Grundstein, professor of management at Case Western Reserve University in Cleveland brought the necessary reinforcements to Hanna's argument for exercising caution.

"First, other decision structures exist. Secondly, other information structures already exist," Grundstein said.

"Don't think if you don't have the hardware with some guy tapping [public information] out that you don't have a system," Grundstein reminded attendees.

A different reaction to computerized information systems came from Myron Weiner of the Institute of Public Service at the University of Connecticut.

"We should be able to use information systems from our home or office," Weiner said arguing for public computer usage.

"An average of only 8% of the city or town budget is presently devoted to the use of computers. But when people realize that computers are for them and not for [bureaucrats], the percentage of allocation will increase," Weiner predicted.

The public should be able to use information systems from their own computer terminals for their own purposes, he continued.

"We have a responsibility to the citizen. The impact of what we do as information systems specialists must be gauged by the effect on people's lives," Weiner said.

Although Weiner may have come off as an information system enthusiast, he did caution the assemblage on the timing of implementing such systems.

Voicing his concerns, Weiner advised conferees not to "play the concept into blue skies" and to be well aware of the costs such systems would incur on the taxpaying public.

'Unstructured Interaction'

Taking a similar tack, Bill Manuel from Digital Equipment Corp. cautioned attendees not to build information systems that only benefit planners.

"The way we need to go is to work with the DPers and vendors. We need an unstructured type of interaction," Manuel said.

"At this point in time, everybody wants to go in different directions. We need tools to effectively and easily provide structures to get information to citizens for whatever purposes they need," he said.

The need for computerized information systems was echoed by Robert Koepsel, a city councilman in Rapid City, S.D.

"Nobody quarrels about the need [for such systems]," he said, "but we are so mired in need that we can't get the systems built."

Department heads are oftentimes the adversaries of plans for the use of the information systems, as are people's fears of computer systems, he said.

Robert Aangeenbrug, Urisa president and conference chairman, summarized the present computerized information system when he said "communication is intuitive at this point. We need to bring our ideas out into the open."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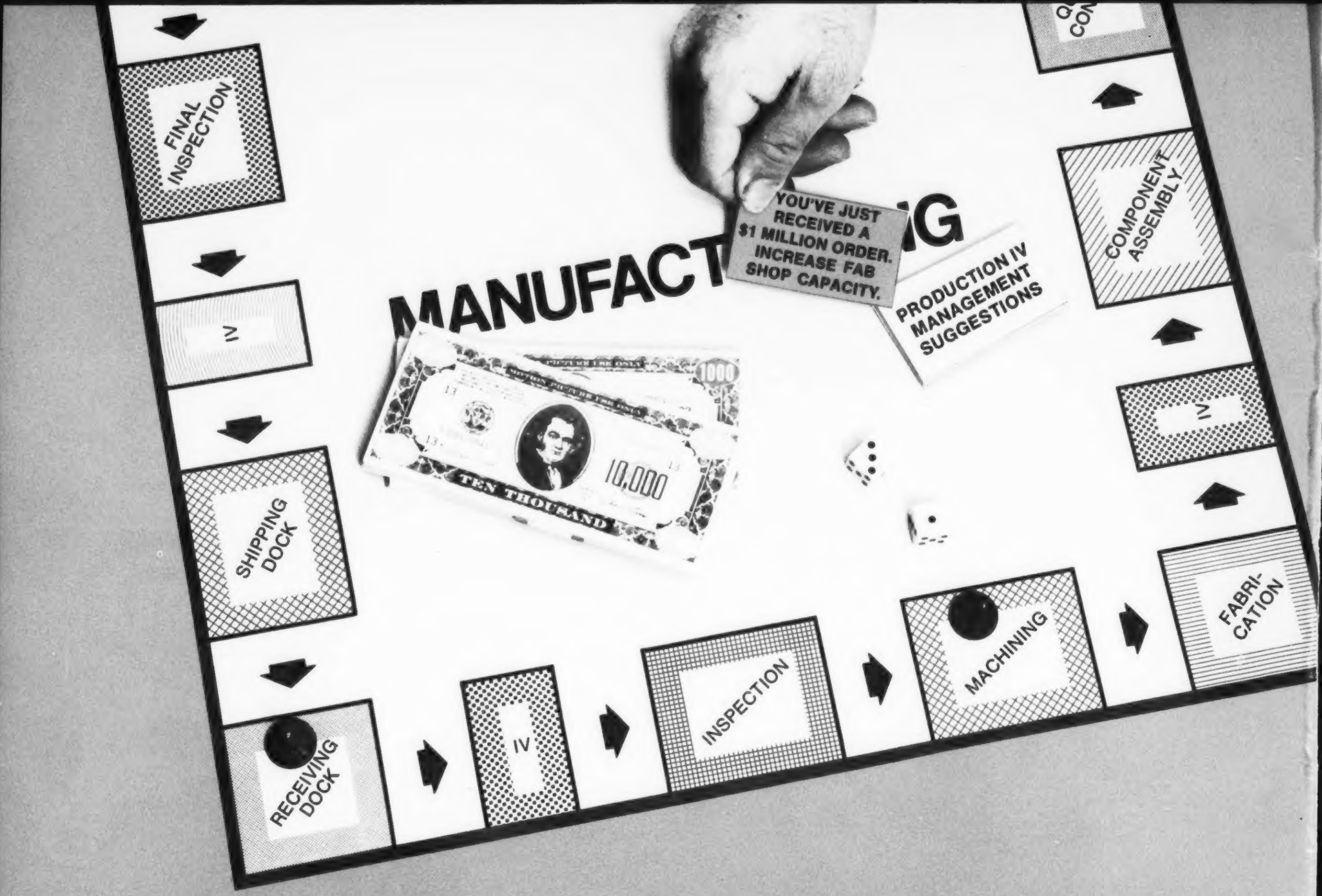

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Marketing Professor Says

Psychological Reasons Hindering EFT Acceptance

ATLANTA – Electronic funds transfer (EFT) systems are not about to sweep the nation overnight. EFT is, in fact, being accepted by consumers more slowly than many have predicted, according to Leonard L. Berry, chairman of the marketing department at Georgia State University.

The phrase "checkless society," he suggested, should be replaced with "less check" society.

In an article in *Banking Magazine*, Berry cited several examples to illustrate the slow progress EFT has made and the psychological reasons why.

An Arthur D. Little study, for example, projects that even when fully developed, EFT systems will probably never replace more than about 70% of paper-based transfers. And, at the end of 1975, the average monthly number of transactions on automatic teller machines (ATMs) and cash-dispensers was only approximately 1,800.

Verne Atwater, a member of the Commission on Electronic Funds Transfers, has stated that "in the case of automated teller machines there are few operations to date that have broken even financially. The volume of transactions is simply not sufficient to cover the cost," Berry noted.

Slow Diffusion

Berry attributes EFT's slow acceptance to a behavioral science theory known as diffusion theory, which concerns the adoption of an innovation, or in this case a new product, by its ultimate users.

Innovations fall into three categories: continuous innovations which have the least disrupting impact on established behavior patterns (such as flouride toothpaste); dynamically continuous innovations which are disruptive but do not materially alter established patterns (touch-tone phones); and discontinuous innovations which are characterized by a major behavioral change (commercial air travel), Berry said.

Electronic funds transfer services fall into the discontinous innovations category, Berry said, noting that this means their diffusion through society will tend to be slow.

"It should be noted that saying a specific new product will diffuse slowly is not the same thing as saying that the product will eventually be successful," Berry added.

A standard diffusion graph portrays the pattern of adoption for those users who do eventually adopt, but makes no mention of the total number of eventual adopters or nonadopters, he said.

Six Characteristics

Berry listed six characteristics which influence the speed and extent of an innovation's acceptance: relative advantage, compatibility, complexity, divisibility, communicability and cost.

Relative advantage, he said, "refers to the degree of superiority of the new product innovation relative to product alternatives it is designed to replace."

Color television and pocket calculators, for instance, have high relative advantage.

Compatibility matches the innovation to current values and behavior patterns, while complexity refers to the user's perception of the difficulty involved in using the innovation.

Compatibility and complexity "are the prime determinants of where on the 'continuous/discontinuous' continuum a product innovation will fall," Berry said.

Divisibility measures the extent to which an innovation may be tried on a limited basis, without requiring consumer commitment.

Communicability refers to the degree of difficulty with which the innovation's benefits can be communicated to the targeted user, while cost refers to the amount of his resources the user will have to expend to obtain the innovation.

ATMs rate poorly in terms of compatibility, complexity, communicability and, in many cases, relative advantage, Berry stated.

ATMs represent an abrupt departure from the consumer's traditional way of interfacing with a bank, he said. "The human teller is replaced by a machine, and the machine not only appears complex to work but, in fact, is complex to work," he said.

Low compatibility, high complexity and poor communicability are not enough to doom an innovation, however, Berry said.

But, with the addition of insufficient relative advantage, its chances are dismal.

"In the case of ATMs, it is doubtful that on-bank-premise, current generation equipment has sufficient relative advantage for enough consumers of most banks now involved in this type of service to allow an adequate return on investment to these banks," he said, noting that people would rather interact with human tellers when the bank is open.

"On the other hand, placing ATMs in strategic off-premise sites, such as an office building, may well provide enough additional convenience (relative advantage) to enough additional people to produce an acceptable market response and justify the bank's investment," Berry stated.

Point-of-sale (POS) terminals operated by store personnel require much less behavior change than ATMs since many people are already in the habit of cashing checks in retail stores "and already know how to hand over a piece of plastic to a merchant," he said.

This would place POS systems in the dynamically continuous innovation category, he added.

"In addition, POS systems rate well on the criterion of relative advantage both in terms of the convenience of fewer visits to the bank and the capability of using an interest-bearing account for routine transactions," he said.

"Benefits such as these should overshadow such drawbacks as loss of float for a great many consumers," Berry said.

"Also, POS systems, like ATMs, are relatively divisible in the sense that the consumer may experiment without feeling that he is necessarily making a permanent commitment," he noted.

Government-Based Systems Seen Posing Big Threat to Citizens

ATLANTA – There could be disastrous spin-offs from the widespread use of government-based, computerized information systems, according to panelists at an Urban and Regional Information Systems (Urisa '76) session held here recently.

Nathan Grundstein, a professor of management at Case Western Reserve University, summarized common thoughts and fears at a question and answer period following a session on "Information Systems as Services to Citizens."

"I come from a stance of doubt," Grundstein told the Urisa members.

"The direction of electronic technology and the potentialities of the market is to take the whole communications structure – not information – and, through a generative process, bring it into the home and collective levels," he said.

"I have the feeling government will be chasing the citizen down the road to find out what he is doing," Grundstein said of the control government could have over public information dispersal.

"There has been much general talk about the need for information systems" here at the Urisa conference, noted William Hanna, mayor of Rockville, Md.

However, the questions surrounding computer-based, public information systems center around whether there will be "greater control or greater democracy and representation.

"Wherever the information will be stored, that's where the power lies. The completely equitable use of information is as hard as gathering information. There is a potential for abuse of the citizenry," Hanna remarked.

"But we are dealing not only with a problem of citizen fear [of government], but also with the abuse of power," Myron Weiner, a professor at the University of Connecticut's Institute of Public Service, argued.

Calling computer-based information systems a tool to do things faster and therefore a way to bring government and the people closer together, Weiner said "I am in business to help citizens deal with a very complex society."

And, as for the misuse of power and public fear, "the telephone is a very powerful information system tool, but I doubt the telephone changed the problem of abuse of power," Weiner said.

Grundstein noted the concept of constitutional liberty is a mystery and the development of citizen capability to access great amounts of information aided by computers in the home will not alleviate "a distrust of government that is sound," he concluded.

Commerce Gives IBM Nod To Sell 370/145 to USSR

ARMONK, N.Y. – The Commerce Department has finally approved the sale of an IBM system to Intourist, the Soviet Union's travel agency.

The system, based on a 370/145, includes eight 3330 disk drives and 140 Model 4505 terminals for use by reservations clerks. Its value is estimated at $5 million.

The Commerce Department had previously rejected IBM's bid to sell a 370/158 and a 370/145 and Model 3330 disk drives valued at $11 million.

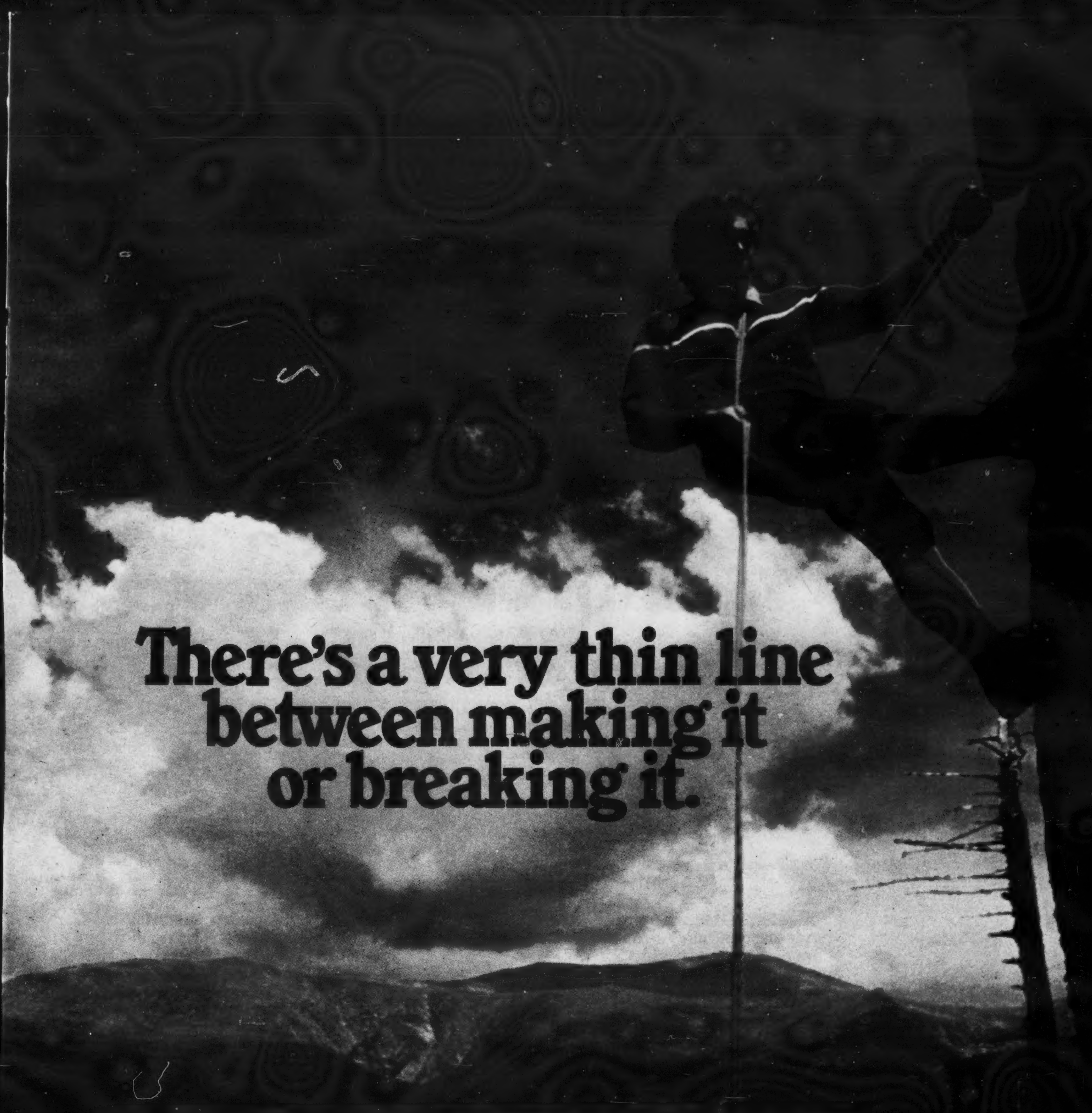
States Busy With Privacy Laws

WASHINGTON, D.C. – While Congress appears to have taken a privacy breather, the states have been busy with legislation of all types.

The chart below tells the story. It is reprinted from *Compilation of State and Federal Laws on Privacy*, a 169-page book available for $10 from Privacy Journal, Box 8844, Washington, D.C. 20003.

	Medical	School	Wiretap	Polygraph	Arrest	Criminal Justice Information Systems	Social Security Number	Tax	Credit	Data Banks	Banks	Misc.
Alabama	X											
Alaska	X	X		X		X						
Arizona	X	X	X			X			X	P		
Arkansas	X					X	X			X		
California	X	X	X	X	X	X			X	PL	C	X XL
Colorado	X	X	X									
Connecticut	X	X	X	X	X				X			
Delaware	X	X	X	X	X							X
D.C.	X		X		X							
Florida	X	X	X		X				X L	P	C	
Georgia	X		X			X		X				X
Hawaii	X			X	X							X
Idaho	X	X		X		X					C	
Illinois	X	X			X					P		
Indiana	X									P		
Iowa	X	X				X					C	
Kansas	X		X						X			
Kentucky	X	X	X						X			
Louisiana	X		X		X	X						
Maine	X	X	X		X	X	X					
Maryland	X	X	X	X	X	X						
Massachusetts	X	X	X	X C	X	X	C	X	X	X		X
Michigan	X	X	X	X		X				P		
Minnesota	X	X	X	X		X		X		X		
Mississippi	X	X										
Missouri	X				X							
Montana	X	X								P		X
Nebraska	X	X	X									
Nevada	X		X									
New Hampshire	X		X									
New Jersey	X	X	X	X	X					P	C	
New Mexico	X		X			X			X			
New York	X	X	X		X				X	P		X
N. Carolina	X	X				X				L		
N. Dakota	X	X										
Ohio	X				X					X		
Oklahoma	X						X		X			X
Oregon	X	X	X	X	X							
Pennsylvania	X	X	X	X			C			P		
Rhode Island		X	X	X	X					P		
S. Carolina					X							
S. Dakota	X	X	X									
Tennessee	X	X			X							
Texas	X	X							X	L		
Utah	X				X	X				X		X
Vermont	X											
Virginia	X	X	X				X C	X	X	X		X
Washington	X	X		X	X	X				X		
W. Virginia	X				X							
Wisconsin	X	X	X					X				
Wyoming	X	X										
Federal Law		X	X		P	X	X	X	X	X	P	X

X = State Law on the Books.
C = Significant Court Decision Affecting Privacy.
P = Legislation Pending in State Legislature.
L = Local Ordinance Within the State.



That's important to remember with high-density drives.

The advantages to 6250 CPI recording — like higher data transfer rates and a reduction in library size requirements — are numerous.

But there are also some disadvantages. One of them is the masking by the GCR format. Because of it the only way to get an accurate error listing is through sense byte interrogation. Ask your Graham product technology man why.

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Contributions Cited

Amdahl Picked DPMA Man of the Year

PARK RIDGE, Ill. – The Data Processing Management Association (DPMA) has chosen Dr. Gene M. Amdahl, founder and chairman of the board of Amdahl Corp., as its 1976 Computer Sciences Man of the Year.

The annual award is given in recognition of outstanding contribution to the field of computer science, DPMA said. It will be presented during Info/Expo 76, DPMA's annual conference, on Oct. 27 in Las Vagas.

Amdahl began his career in information processing in 1952 with IBM, where he held positions as the chief designer for the 704, initial planner for the 709 and 7030 and manager of architecture for the 360.

In 1970, Amdahl founded his own company which manufactures the Amdahl 470V/6.

He has a PhD in theoretical physics from the University of Wisconsin and, while doing work on his doctorate, designed the first overlapped, floating point computer.

Amdahl is the holder of eight patents registered between 1959 and 1968 on such developments as recognition of recorded intelligence, analog-to-digital conversion, message display and transmission, stored logic computer, large scale shifter, memory protection system, storage protection system and the IBM System 360.

Societies/ User Groups

Call for Papers

1977 IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS, Phoenix, Ariz., April 25-27.

The symposium is devoted to all aspects of the theory, design and applications of circuits and systems. Papers are solicited in, but not restricted to, the areas of new concepts for the analysis and design of circuits and systems, computer-aided techniques and new devices and circuits.

Four copies of each paper should be submitted by Oct. 1 to T.N. Trick, Department of Electrical Engineering, University of Illinois, Urbana, Ill. 61801.

MICROCOMPUTER-77 CONFERENCE AND EXPOSITION, Oklahoma City, Okla., April 6-8.

This conference concerns microcomputer systems, a survey of the range of current applications and exploration of potential areas for future development. The papers should include theory, implementation and applications. Emphasis will be placed on exhibits.

Abstracts should be submitted by Oct. 1 and finished papers by Dec. 1 to Dr. S.C. Lee, School of Electrical Engineering, University of Oklahoma, Norman, Okla. 73069.

1977 JOINT AUTOMATIC CONTROL CONFERENCE, San Francisco, June 22-24.

The theme of the conference is "Control Theory and Applications in the Service of Local Industry and includes both tutorial state-of-the-art and general sessions. Areas covered will include system modeling and identification, self-organizing, learning and hierarchical, decision and control, pattern recognition and linguistic methods applied to large scale systems.

Abstracts should be sent to Dr. Alex Levis, Assistant Program Chairman, Systems Control Inc., 1801 Page Mill Rd., Palo Alto, Calif. 94304 by Nov. 1.

1977 ASSOCIATION FOR COMPUTING MACHINERY (ACM) COMPUTER SCIENCE CONFERENCE, Atlanta, Jan. 31-Feb. 2.

The conference will feature short reports on current research in computer science by students, faculty and researchers in computer and information science. Abstracts of research reports should be submitted to Professor Vladimir Slamecka, Director, School of Information and Computer Science, Georgia Institute of Technology, Atlanta, Ga. 30332 by Nov. 15.

1977 NATIONAL COMPUTER CONFERENCE (NCC), Dallas, Texas, June 13-16.

Major emphasis will be placed on the following areas at the conference, although papers and session proposals on other topics are welcome: the technology of computing, management and computing, the uses of computing, the individual and computing.

Previously unpublished papers are solicited. The material submitted should include six copies of the final paper, which should be a maximum of 5,000 words; six copies of a page containing a 150-word abstract, the computing reviews classification and four to six key words descriptive of the content of the paper; and three copies of a short biography of the presentor of the paper.

Deadline for all submissions is Dec. 1. Papers should be sent to Dr. Robert R. Korfhage, Program Chairman, Dept. of Computer Science, Southern Methodist University, Dallas, Texas 75275.

13 Win ICCP Awards

CHICAGO – Thirteen Certificates of Excellence for outstanding performance in the 1976 Certificate in Data Processing (CDP) examination have been awarded by the Institute for Certification of Computer Professionals (ICCP).

The highest score on the exam was achieved by Barry Berk, employed at the First Federal Savings and Loan here. In addition to achieving the highest total score, he also achieved highest honors in Principles of Management.

The other winners were Clinton Alston of Dallas, Texas, Chris Babcock of Chicago, Robert Brown of Atlanta, James Burns of Atlanta, Robert Camacho of Jacksonville, Fla., Richard Case of Yorktown Heights, N.Y., Howard Hensley of Skokie, Ill., Robert Ilderton of Memphis, Tenn., Malcolm Lewis of Pasadena, Calif., Thomas Mathews of Pasadena, Calif., Charles Rauch of New York and William Simmons of Montreal.

Calendar

Sept. 17-18, Colorado Springs, Colo. – **"Managing the Legal Function,"** sponsored by the Association of Data Processing Service Organizations (Adapso). Contact: Adapso, 210 Summit Ave., Montvale, N.J. 07645.

Sept. 18, Denver – **1976 Mountain Region Computing Conference**, sponsored by the Association for Computing Machinery (ACM). Contact: Jeanne M. Tucker, Registration Chairwoman, '76 ACM Mountain Regional Computing Conference, 6900 Independence St., Arvada, Colo. 80004.

Sept. 20-21, Los Angeles – **Executive Seminar on the Impact of Privacy Legislation** sponsored by the Data Processing Management Association (DPMA). Contact: DPMA, 505 Busse Highway, Park Ridge, Ill. 60068.

Sept. 20-22, Denver – **Annual Data Processing Conference of the Super Market Institute** (SMI). Contact: SMI, 303 East Ohio, Chicago, Ill. 60611.

Sept. 20-22, Washington, D.C. – **Simulation and Simscript '76**, sponsored by CACI, Inc. Contact: J.S. Annino, CACI, 12011 San Vincente Blvd., Los Angeles, Calif. 90049.

Sept. 20-22, New York – **Seventh Annual Input/Output Seminar**, sponsored by the Input/Output Systems Association (IOSA). Contact: IOSA, 999 Bedford St., Stamford, Conn. 06905.

Sept. 22-24, Ottawa, Ont. – **APL 76 Conference**. Contact: Comshare Ltd., 304-11 Adelaide St., West, Toronto, Ont. M5H 1M2, Canada.

Professional Group Starts For Data Entry Managers

GREENWICH, Conn. – A professional organization has been formed to represent a large but unrepresented segment of the DP community – data entry managers.

The Data Entry Managers Association (Dema) was started in June by a group of people who participated in a seminar in data entry management. There are currently 60 members.

Dema was created to "promote the individual development of its members, to be a place for ideas to be exchanged, a forum for the education of the manager and his staff," according to Norman Bodek, president of Key Universal Ltd.

Societies/ User Groups

Further information is available from Bodek at Dema, 16E Weavers Hill, Greenwich, Conn. 06830.

Info to Include 10 Conferences

NEW YORK – Info 76 will consist of 10 separate "conferences-within-a-conference" when it is held in Chicago on Nov. 8-11.

Six of the small conferences will be devoted to the needs of those executives who are users of information while four will be addressed to those who develop the data.

The conference and accompanying exposition will help bridge the gap between end users and information managers, according to Clapp & Poliak, Inc., the conference sponsor.

The six end-user conferences will be for banks, industrial corporations, retail organizations, hospitals, insurance companies and financial officers.

Those for information managers will cover DP management, office systems, DP technology and mechanization of information systems in small organizations.

Further information is available from Clapp & Poliak at 245 Park Ave., New York, N.Y. 10017.

Two to Share Turing Award

NEW YORK – Michael O. Rabin of Hebrew University and Dana S. Scott of Oxford University have been chosen by the Association of Computing Machinery (ACM) to receive the A.M. Turing Award for 1976.

The award will be presented at ACM's annual conference Oct. 20-22 in Houston.

The annual award is given to members of ACM for technical contributions of great significance in computer science. Rabin and Scott were chosen for their contributions in the theory of computing, particularly for a joint paper they did that introduced the idea of nondeterministic machines.

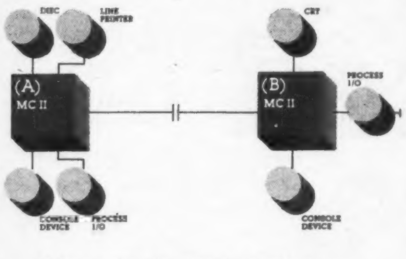
Rabin, a professor at Hebrew University in Jerusalem, has made contributions on complexity theory, tree automata and computations that are inherently exponential.

Scott, of the Mathematical Institute of Oxford University in England, is primarily a philosopher and logician but has contributed to computer science through his theory of computation, which has provided a model for the meaning of recursive computation.

Case History No. 1
A giant aluminum company chose MODCOMP for this simple two-computer "network."
Computer A is at one of the Company's plants in Pennsylvania. Computer B at a research facility in Tennessee, several hundred miles away. The two computers communicate with each other over ordinary dial-up telephone lines. Using MAXNET, operators at either location have full access to all the resources of both computers. Data, programs, peripheral services can be freely exchanged.

For example, suppose a research engineer at Computer B needs to compile a new program. By a simple terminal request, he can call down language processors from Computer A, compile and edit his program on his own computer, and transmit his listing outputs back to Computer A for printing.

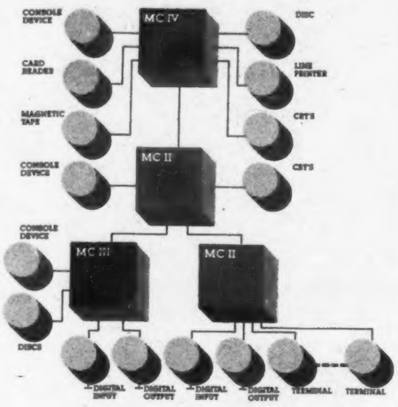
Alternatively, a programmer at Computer A can prepare a program and load it directly down to Computer B. Even though it's the break of day in Tennessee, and the computer is all alone in the office.



This relatively simple system illustrates the flexibility of MAXNET, whether the computers in your network are in adjoining rooms, or a thousand miles apart. It would work just as well if they were on different planets, but nobody's asked us to do that. Yet.

Case History No. 2
This MODCOMP Network is in operation at the central R&D facility of a major oil company. It's a good example of how MAXNET, coupled with across-the-board compatibility of MODCOMP hardware, allows you to start as small as you want to, and grow as big as you need to. Without a heavy initial investment. And without costly re-programming as your system expands.

It started, as part of a long-range plan, with the installation over two years ago of a MODCOMP III. Although this model has now been superseded in our line by later models of the MODCOMP II, it is indicative of the long-term compatibility of MODCOMP systems that the III remains today a vital part of this network.



As the system has since evolved, a 32-bit MODCOMP IV now acts as host computer. Replacing (at a fraction of the cost) the company's former stand alone IBM 1800, the MODCOMP IV is expected to provide 10 to 25 times the throughput of the big machine, which had long since reached its saturation point.

A MODCOMP II acts as communications controller between the host and satellite computers.

The satellites consist of 16-bit MODCOMP II's performing various data acquisition and control functions for a series of pilot plants. The MODCOMP III handles analytical instrumentation, providing simultaneous service to over 80 instruments of various types.

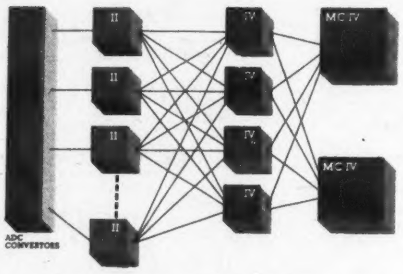
The advantages of this system are, firstly, it's computing power—many times that of the old stand-alone system. It's reliability (the MODCOMP system has had an overall availability of 99.3% of prime time over the past two years). It's expandability, which allows virtually unlimited future growth. And last, but far from least, it's economy and ease of operation.

Case History No. 3
A NASA prime contractor has installed this highly sophisticated MODCOMP hierarchical network to handle complex stress and fatigue test analyses.

Dual redundant 32-bit MODCOMP IV's at the "host" level communicate with an intermediate level of several smaller 32-bit MODCOMP IV's, screening data received from the satellite computers. A large number of 16-bit MODCOMP II satellites interface directly to the various processes. The entire system has built-in redundancy at each level.

Among minicomputer vendors, only MODCOMP has the capability to build a network of this size and complexity, using standard hardware and software products. At a small fraction of the cost for a single stand-alone computer large enough to perform the same multiple tasks. And with far greater efficiency.

It clearly illustrates the unlimited expandability of MAXNET in setting up any kind of network system you need to do your particular job.



For clarity, peripheral devices omitted from this diagram.

Note: The MAXNET systems shown here are all resource-sharing networks of the type commonly used in laboratory and industrial measurement and control systems. For dedicated telecommunications applications, MODCOMP offers a separate software system called MAXCOM. For more information, send for our Data Communications brochure.

MODCOMP® TSP*
***TSP = Total Systems Performance.**

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CCH Developer Says System 'Hasn't Met Expectations'

By Nancy French

Of the CW Staff

JACKSON, Wyo. – The excitement and optimism that marked the beginning of computerized criminal history systems has been reduced to fingerpointing and name calling today, according to Bob Marx, a consultant who was one of the first systems people to study ways to bring automation to law enforcement.

The Federal Bureau of Investigation's (FBI) Computerized Criminal History (CCH) system has "not met our expectations for many reasons besides the present controversy over whether the FBI should control a message-switching system," Marx said. He was the technical affairs deputy for the original Project Search, which developed the CCH concept under federal contract.

"It's like the archduke who was assassinated in 1914 that supposedly caused World War I," he explained. "That assassination didn't cause World War I any more than message switching is responsible for the dissension" over the FBI's $600 million CCH program.

The FBI's proposed message-switching system would allow the FBI to return criminal records it is holding for nine participating states to their files and maintain only multistate and federal offenders.

Instead of obtaining records from the National Crime Information System (NCIC), states would then obtain them from the state were they are held via an automatic switching system controlled and maintained by the FBI.

Problems Outlined

The FBI's CCH system has many problems, Marx told attendees at the National Law Enforcement Telecommunication System's annual meeting here recently.

Disagreement over CCH policy has resulted in a battle between the Law Enforcement Assistance Administration (LEAA) and the FBI, he said, because LEAA's power to grant money, pass regulations and control system configuration by funding policy has threatened the traditional relationship between the FBI and local law enforcement.

Dissension between the FBI's 50-year old Identification Division, with responsibility over fingerprint-oriented files, and NCIC computer specialists who "displaced" it are another portion of the problem," he said.

Congressional disagreements are still another dimension of the problem, according to Marx. "Some people have suggested that a coalition of bleeding heart liberal congressmen and the American Civil Liberties Union on the one hand and the law enforcement community on the other hand is to blame," he said.

Marx, however, laid much of the blame on the law enforcement community itself.

"Our need for CCH has never been put forth in simple persuasive terms," he said. "We have said, 'We need it because we need it because we need it.'

"We have never said, 'This is why we need it, this is how much it is going to cost, this is what it is going to do, and this is what we can't do if we don't have it,' " Marx said.

Without message switching, the CCH system as it is presently configured as a centralized data base "will not work," he said.

Many disagree with the policy of maintaining CCH records at the federal level within easy access of federal agencies.

"About 16,000 inquires a day are addressed against the FBI identification files for federal noncriminal justice purposes in full compliance with federal laws. Many records, which would not have been permitted to be used for preemployment checks for civil servants in the states that created them, are open to federal agencies once included in the bigger file," he said.

Others say there is so much duplication in the system that state legislatures have been reluctant to create a file that would be built at great expense within a state and then shipped off to the federal level, where it is out of the state's control and where it will be used free of charge.

"It's easy to list problems," he said, "but the point is, where do we go from here?"

The FBI has been denied permission to develop the message switching portion of the CCH system and, as a result, Director Clarence Kelley has asked U.S. Attorney General Edward Levi for permission to end its participation in the CCH program.

If the Attorney General decides to deny this and instead gives the FBI message-switching authority, "it's not going to help very much because the other problems are still going to be there," Marx said.

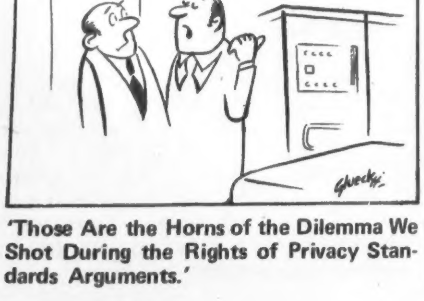
Privacy Seminar Set On Impact of Laws

LOS ANGELES – A one and one half day executive seminar on the impact of privacy legislation will be sponsored by the Data Processing Management Association (DPMA) at the Marriott Hotel here on Sept. 20-21.

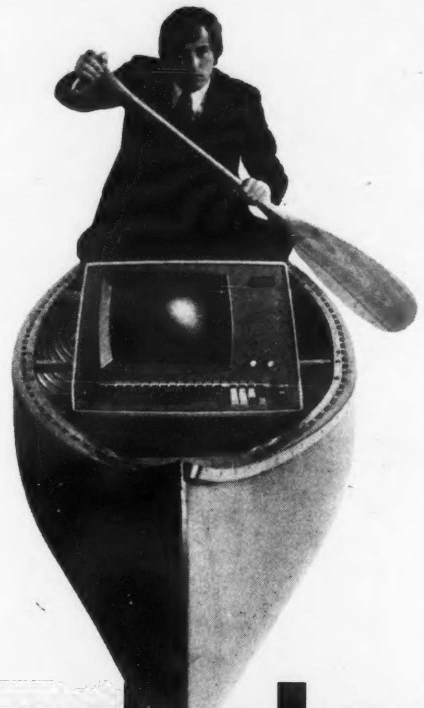
The seminar will give DPers an understanding of the problems encountered by private companies and federal and state agencies in complying with privacy legislation, according to George R. Eggert, DPMA international vice-president of program development.

Participating in the seminar as panel members will be industry and federal government representatives, including Edward J. Brennan Jr., general manager of TRW's Information Services Division, and Philip A.D. Schneider, associate director of the Bureau of Manpower Information.

Additional information is available from DPMA, 505 Busse Highway, Park Ridge, Ill. 60068.



'Those Are the Horns of the Dilemma We Shot During the Rights of Privacy Standards Arguments.'



For Multistate Offenders

CCH Designer Urges Alternative for Arrest Records

JACKSON, Wyo. – "The Federal Bureau of Investigation's [FBI] Computerized Criminal History system has so many problems we may have to start over again with a simpler system where the states can control their own destiny," Robert Marx told law enforcement telecommunications specialists at the National Law Enforcement Telecommunications Systems' (Nlets) annual meeting here recently.

"We should encourage gradualism – allowing states to join or not to join – regardless of their level of automation," he added.

Nlets is a state-supported and state-run nationwide law enforcement message-switching system.

Marx, who worked as deputy for technical affairs for Public Sytems, Inc., the federal contractor that developed the original Computerized Criminal History (CCH) system concept eight years ago under a federal grant known as Project Search, suggested a new concept.

"An examination of the use of computerized criminal histories shows the need for rapid access does not exist in interstate exchange of records to the same extent it does for in-state records," he said.

"We do not have to collect record segments from dozens of states to assemble one complete record as was once believed. In fact, the number of offenders who have more than four states involved is less than one-tenth of 1%," he said.

About two-thirds of all multistate offenders are only active in two states, he added.

Two states could cooperate with minimum cost and minimum loss of control over their records by extracting from their own CCH records the FBI number and state identification number (SID) for each arrestee and prepare a magnetic tape of such abstracts, Marx said.

Tapes from the two states could be sorted and merged and each state given a new tape with the two SID numbers for each multistate offender, he suggested.

The new tape could then be merged into the state's CCH file so subsequent inquiries could provide sufficient information to allow an inquiry on an out-of-state offender to get the rest of the record.

Of course, not all potential benefits of CCH would be available, but the "system" would be immediately useful, inexpensive and easy to implement and would bypass all present problems that plague the present FBI-run system.

Additional states could be accommodated by sorting, merging and selectively generating tapes. States that did not wish to join would not have to do so, Marx said.

As more states join, a minicomputer might be appropriate for the application; because of the mini's simplicity, the computer costs to each state would be modest.

If participating states want on-line access to the FBI/SID record, that could be arranged without forcing other states to make a similar decision, he said.

Offenders' records could be matched with corresponding FBI numbers at the FBI's Identification Division. If the FBI wished to participate, a data entry station in Washington could be added to the system.

If some states would prefer to enter a full name file rather than only the two numeric identifiers, that, too, could be arranged. The key word is "accommodate," Marx said.

The action of two states could result in a national CCH system "without national commissions, a $600 million price tag or any Attorney General decisions – just CCH," he said.

Nlets used this technique to develop its present interstate exchange system for vehicle and drivers' registrations.

"With virtually no formal organization, Nlets managed to come up with a system in which states could participate whether or not they were highly automated," Marx pointed out.

Unlike the Law Enforcement Assistance Administration's Comprehensive Data System (CDS), no funding scheme would tie other rewards to whether a state participates in CCH.

The Nlets drivers' registration system, started much like this, today has 30 states participating and has proved itself very useful, he said.

Bankers Association Seeks Supreme Court Review of CBCT Case

WASHINGTON, D.C. – The American Bankers Association (ABA) has filed an *amicus curiae* brief before the Supreme Court in support of a petition requesting the court to hear an appeal of lower-court rulings on customer bank communications terminals (CBCTs).

The ruling stated CBCTs were bank branch offices and therefore subject to federal and state laws governing branches.

The ABA contended the lower-court ruling would "hobble commercial banks in freely experimenting with the delivery of electronic funds transfer services" to their customers and would deny the public the benefits of expanded competition.

"The development of CBCTs represents a significant technological advance unforeseen in 1927 when Congress amended the National Bank Act to permit national banks to branch," the ABA brief argued.

In holding that the definition of "branch" in the act covered CBCTs, the lower court looked exclusively to the principle of "competitive equality" between national and state banks, it said, stating that the principle was not the motivating factor behind Congress' passage of the act.

"The use of CBCTs promises savings to consumers, merchants and banks in excess of $1 billion per year," the ABA contended.

A Mile Underground

Mini Monitors Mine Noises to Protect Workers' Lives

KELLOGG, Idaho – When striking miners return to work at the Sunshine mine here they may be afforded a little more "job protection."

A minicomputer located a mile below the mine's surface will be helping mine engineers cope with the problem of sudden dangerous rock bursts.

The Sunshine mine is the nation's leading silver mine as well as the country's largest domestic antimony producer. It also produces copper, lead and gold as byproducts of the silver and antimony mining.

Overstressed rock has frequently posed a danger to miners, according to Kenneth Castleton, chief engineer of the mine. An IBM 7 has been installed as a preventative measure, to assure, he said, that engineers are aware of where and when rock blasts are about to occur.

Although the minicomputer is "fully operational," Castleton said, it hasn't yet been used in a crisis situation because the miners are on strike and rock stress is not being artificially altered at present.

"We get it out of balance when we start mining and creating new excavations," he added.

The United Mine Workers have been on strike since March, he noted.

The configuration at the mine includes an 8K IBM 7 hardwired to a signal filter which in turn is hardwired to 27 geophones, or small microphones that pick up rock noises.

"The computer itself gathers all the information, calculates it and reports it to the rock mechanic engineer." Such information as location, time and magnitude of rock noise events is calculated and logged by the system, Castleton added.

It is the engineer's job to interpret the end results of the tedious calculations that "would be impossible to do by hand." Any decisions that are made come from the engineer, Castleton said.

"We have more than 400 miners working below ground," Castleton continued. "Their safety and productivity are closely tied to the control of rock bursts.

"When noise levels reach the danger point, we then know where the pressure has built up and can evacuate the area. And, given enough advance warning, we can drill and blast relief holes to disperse the stress," Castleton noted.

"We are attempting to control both horizontal and vertical stresses in the rock which are a result of both the depth of underground work and of the way the rock was folded and pressed when mountains were created," Douglas Sumway, rock mechanic engineer, noted.

"There are always snapping and popping noises in the mine as a result of the rock adjusting to the high stress. In the past, old-timers would wait until they heard no noise and then clear out. Silence seemed to precede a big burst," he added.

Illinois Laws Limit Banking Terminal Uses

CHICAGO – It was one step forward and two steps backward for banks here as some legislation affecting customer-bank communications terminals (CBCT) was enacted and some was struck down.

Gov. Dan Walker signed into law a bill permitting a bank to open a second pedestrian or drive-in facility within 3,500 yards, or two miles of its home office.

Illinois law previously allowed one automated facility within 1,500 feet of the main office [CW, July 5].

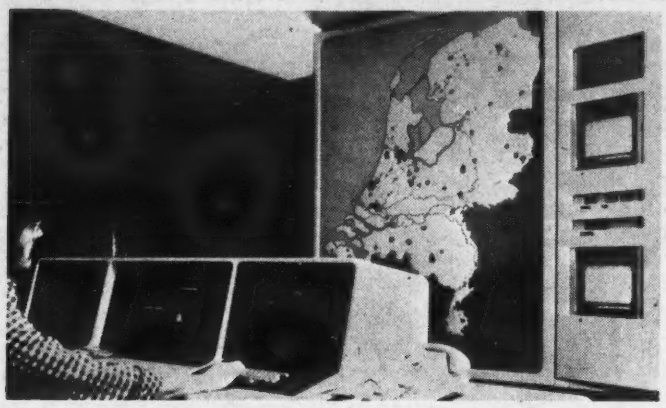
The new law clearly limits these facilities to personal banking transactions for current bank customers. They will not be authorized to open new accounts, accept loan applications or offer services other than deposits, withdrawals, transfers and loan payments.

In a separate action, Circuit Court Judge Raymond K. Berg struck down the Chicago ordinance which the City Council adopted last month to legalize "community banking offices."

The ordinance, passed under the home rule statute, was contested by the State of Illinois Banking Commissioner, who asked it be ruled unconstitutional [CW, Aug. 2]. Illinois law prohibits branch banks.

At the same time, Continental Illinois National Bank and First National Bank, with CBCTs already installed, had petitioned to have the ordinance ruled constitutional.

READER SERVICE CARD PAGES 19 AND 20 MISSING.



An illuminated wall map, which shows all regional monitoring stations, lights up when sulphur dioxide concentrations for these stations surpass threshold values stored in the computer.

With Distributed Net

Netherlands Tackles Pollution

THE HAGUE, The Netherlands – Officials here are doing something about their country's air pollution problem.

A network of minicomputers attached to a host CPU is monitoring the sulphur dioxide concentration throughout the nation.

Sulphur dioxide (SO_2) acts as an indicator of the overall level of air pollution, government officials noted. If a predetermined threshold value is exceeded and rapid wind dispersal seems to be unlikely, the various industries in this country are required to restrict their operations.

The National Monitoring Network is divided into nine regional networks, each with its own Philips minicomputer. Minis used are the P-852, P-856 and P-857.

Each regional network is linked to a Philips P-9200 CPU at the National Air Pollution Measuring Centre at Bilthoven, which is located in the geographical center of the country.

Some 250 "sniffing posts" located both in a regular geographical grid at distances about 18 miles apart and more frequently spaced in highly industrialized and densely populated areas sense the SO_2 concentrations each minute and pass on the results to the minicomputer in each of the nine regional centers. The centers process all of the measured data and transmit it to the main computer.

The minis at the regional center also provide information about wind direction, wind speed and atmospheric humidity, obtained from 40 air monitoring units equipped to take meteorological data. The data can show where dangerous concentrations may accumulate, the officials said.

At the regional centers, a printer linked to the mini prints out the hourly average values for SO_2 in micrograms per cubic meter, together with the date and time. The mini also carries out various calculations to correct the concentrations measured for the effect of location, time, wind direction and season.

If the corrected values, averaged for the whole region, rise above a specific threshold, the computer gives an internal alarm.

If, on the basis of meteorological information and other factors, it seems that the weather conditions will remain unfavorable for at least the next six hours, a coded message is sent via a dedicated phone system to certain companies, who in turn stop such activities as the cleaning of boilers and stacks and switch to low-sulphur fuel.

The detection equipment can locate a specific source of pollution as well; officials noted.

At the central facility, monitoring stations registering a higher SO_2 concentration than the values stored in the system are displayed on an illuminated wall map.

The data stored in the central system is used to compile statistical and model studies to help the government achieve more sophisticated supervisory and alarm systems.

Regional and national surveys of air pollution are produced monthly, semi-annually and annually, and studies of future trends are compiled.

Cooperative Nets Urged for EFT

BRIDGEPORT, Conn. – Banks exploring electronic funds transfer (EFT) systems should consider regional cooperative development first, according to John French.

Addressing a recent bankers meeting here, French, vice-president of marketing for National Sharedata Corp., said banks could realize many benefits, including economic gains, by sharing an EFT network on a cooperative basis.

Developing a system in a local trade area is important because over 70% of all checks written are written locally, French said.

Editorial

Diminishing Alternatives

As the fall season of business activity begins, there are some conflicting indicators of how the DP industry is doing. Basically business is good and getting better.

And yet in almost every category within the industry there is an example of a supplier that is having a hard time and appears to be hanging on. These cases can be dismissed as isolated incidences of poor business management, but the causes may lie deeper.

As the DP industry matures, the list of viable suppliers has been slowly, but steadily, shrinking. Most users are very much aware of which suppliers are healthy and which are not.

The key issues behind this spotty trouble in the midst of a business upswing may lie in the changing character of the DP industry. There is no doubt that the dominant suppliers are becoming more aggressive. And sheer size and resources tend to favor the major supplier.

For users, the risk of depending on a small unproven vendor becomes greater each time a marginal company succumbs to business pressure. At the same time, any attempts to limit the power of the giants – AT&T and IBM – appear stalled in the cumbersome legal system.

Lower prices and faster machines with greater flexibility are a boon to the user. These are real instances of technology being transferred to benefit the customer.

But, at the same time, there is the nagging feeling that the available alternatives are slowly, but surely, being decreased. Even the major suppliers have serious reservations about becoming the only suppliers.

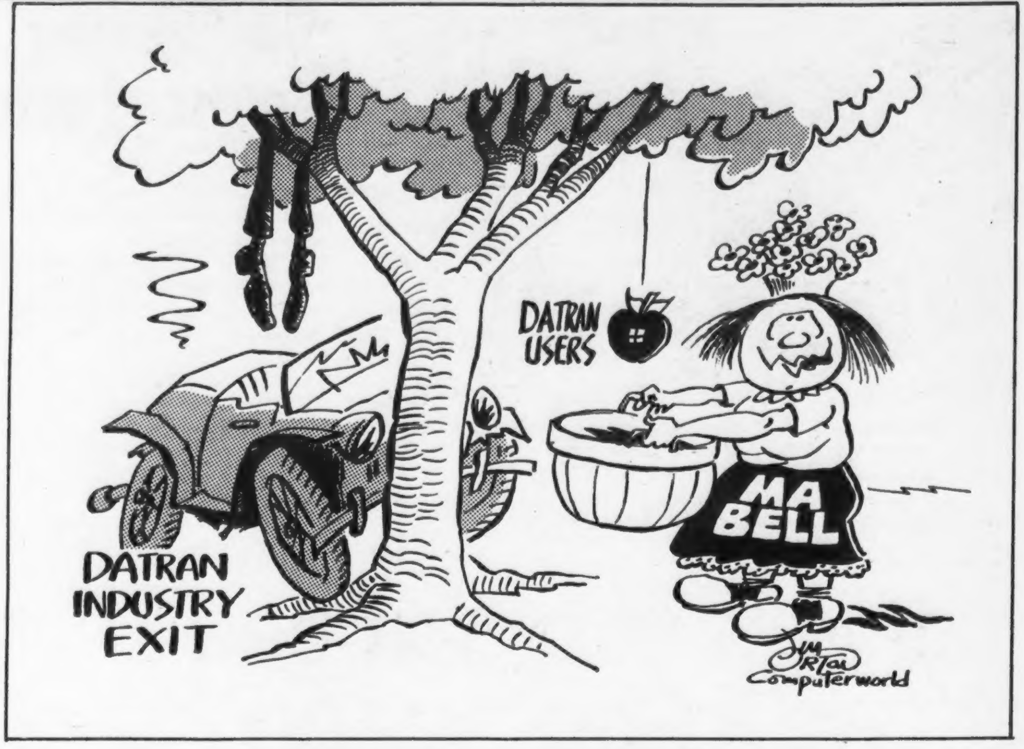
Perhaps the DP industry, like so many before it, is destined to be dominated by a small group of super companies. But much of this industry was founded on principles advanced by small innovators who pioneered key developments. Many of these innovators patterned companies around their product only to be later swallowed up.

The real advantages of competition lie in the prospect that there is always room for the innovator that has something users need. If that spark of competitive innovation is snuffed out, we may one day be working in a stagnant industry.

Research and development is too important to be entrusted to a few companies with the power to decide when products should be announced for the optimum marketing advantage. Creating an environment where the little guy can operate concerns us all.

Users on the verge of making important systems decisions should consider all suppliers. And above all, management should guard against policy statements that prohibit novel answers in the DP center.

The DP manager should be an ally of management in taking calculated risks to optimize corporate profits. A sterile DP center could be the outpost of a sterile corporation. That is something for every company to avoid.



'Lucky I Just Happened to Be Passing By . . .'

Letters to the Editor

In Response to Responses: 'Standard' Misused in DP World

In reply to the replies [CW, Aug. 30] to Anita Benson's letter [CW, Aug. 16], I offer the following:

To James M. Brown: I suggest he redo his math degree. The mathematical concepts he referred to are not standards, but rather they are hypotheses, rules and conclusions. I have never seen the word "standard" used in mathematics quite the way it is used and misused in the world of the computer. And, how about nonstandard analysis, non-Euclidean geometry and, in complex analysis, the "non-mean value theorem"?

To Dave Myster: Basic the language of the artist? Did Michelangelo carve in soft cheese? Did Rembrandt paint with mud?

Now the concept of structured programming (and I do indeed recommend it to my students) has admittedly been badly needed especially for the benefit of the retarded programmer and his victims. But the price for this new discipline has been the rise of a new strain of computer pedant.

An amusing note: McGowan and Kelly in their *Top-Down Structured Programming Techniques* define a structured flowchart essentially as a nested combination of "fundamental" flowcharts from a given, but arbitrary, set S.

Thus, if S is the set of all flowcharts, then all flowcharts are structured and so are all of Benson's creative programs.

Terence J. Reed

Greensboro, N.C.

Headline Itself Misleading

The editorial in the Aug. 30 issue of *Computerworld* asked users to bring "distorted and misleading stories" to the attention of the editors of the publications in which they appear.

In accordance with that request, I should like to call your attention to a headline which appeared on Page S/17 of that same issue which read "Minis, Satellites Cut Marine Corps Turnaround 300%."

To cut turnaround by 100%, output would have to be produced the instant input was received. To cut turnaround by 300%, output would have to be produced prior to input. That would be a real breakthrough in systems performance.

I hope this may pique your interest in the field and "lead to better and more accurate coverage."

David B. Goldstein

Elvid Management Services, Inc.
Fort Lee, N.J.

Benson Wrong on Many Points

I read with considerable interest the bull session ranting of Miles Benson on Snobol 68 [CW, Aug. 23] and would like to point out he's wrong on nearly every point if, by Snobol 68, he's referring to Snobol4, the language introduced by Bell Laboratories in 1968.

First of all, nobody's really convinced Snobol4 is the most rigorous language ever invented. It is, however, one of the easiest to write in; all you have to do is leave spaces around operators and nearly anything you write is correct.

The rigorous definition was, in effect, the machine-independent implementation which is now available on nearly every medium- to large-scale computer on the market. Almost no implementor sneered as he labored the few months required to put the compatible compiler-interpreter "on the air," except at the inherent inefficiencies of machine-independence.

As for programmers using Snobol4, the number is probably in the thousands, world-wide. I have taught it as a programming tool and have made extensive use of it in the engineering of a new Cobol compiler for my employer, a major computer firm.

Therefore, I don't consider Snobol4 a failure and don't see how Benson does.

Michael D. Shapiro

San Diego, Calif.

Data Past

Five Years Ago
Sept. 11, 1971

NEW YORK – Digital Equipment Corp. became a full-fledged mainframe supplier when it expanded its Decsystem-10 line of computers by adding a Decsystem-1040, a 1050 and 1070 and two dual-processor intermediates, the 1055 and 1077.

The DEC machines were in the IBM 370/135 to 370/155 range and included a complete line of software, double-density disks, communications equipment and built-in, double-precision floating-point hardware.

Prices for the machines, aimed at medium-scale users, ran from $180,000 for the 1040 to $893,000 for the dual-processor 1077 with minimum core memory of 131K.

– – –

LOS ANGELES – This city became a test site for cross-referencing of 14 different types of ordinary identification used to cash checks when the Law Enforcement Assistance Administration gave it a $1 million grant to stop money gained from forged checks and other worthless documents with the help of a computer-based detection system. The system was dubbed Automated Worthless Document Index by the Los Angeles Police Department.

The French Dilemma

Computers aside, the French really know how to live. They grow their fruits and vegetables to maximize flavor instead of shippability, drink wine instead of soft drinks (and reuse the bottles), and remember how to bake bread. They are great at electrical distribution, fast trains, and operations research. But they got off to a terribly late start in our field, due to many factors: the physical and psychological damage of World War II, the rigidity of their educational systems, the small size and conservatism of their industries, the dullness of their business machines company (Bull).

And when they did start, there was no plan. The French are great planners, and there is an interaction at the national level between government and business (the Patronat) which, while not as vigorous as Japan, Inc., makes planning effective. The nationalized industries also provide connective tissue. But Machines Bull, and the little outfits like Logabax, did not benefit from this, and when the former was foundering, the deGaulle administration could not react in time. Hence the sale to GE – a horrid bone stuck crosswise in the throat of Gallic pride.

So a planning organization was set up after the fact, the Delegation a l'Informatique, under a bright but not experienced leader, Maurice Allegre. He wore two hats: was to get some hardware capability going, and also to use the IBM and Bull equipment installed in government and controlled industry more efficiently – which meant preferential procurement as soon as there was anything to procure. That led to the creation of CII, the IRIS line of machines, a share in a European consortium called Unidata (now thoroughly defunct), and so on.

The by now quite powerful and attractive private software and OR houses benefited slightly from this, but not nearly enough. They turned to English partnerships, and later of course to work in the OPEC countries, especially Iran. Their success, without much help from the government, demonstrates the quality of *les gens*.

Honeywell took over the General Electric mishmash, and finding it hard to move, ran a garage sale. There was turmoil in the Delegation; Allegre got ground up in the machinery, and some defense *types* took over. In the upshot, the government helped CII and some heavy-industry outfits buy back control of poor battered Bull. Unidata collapsed. Philips of the Netherlands swallowed its losses, fired two thousand people, and left the arena. What a hecatomb – of course, the public relations boys called it a great victory!

Now what do we see? A concentration on central processor design, manufacture and sales, with heavy preferential procurement guaranteeing a rather minute market. Peripheral equipment, although much more than half of the hardware, is to be bought elsewhere; not even from Honeywell, which has sold off that capability to Control Data. Software I don't know: perhaps in-house, more likely shared with Paris cottage industry. And the heart of the technology, the center, the limiting factor: the chips? To be bought from Fairchild or Motorola or Nippon Electric, or some such.

Why couldn't they have inverted the concept? The investment, the losses to be covered, the government and controlled-industry purchases, the marketing costs outside France, will run well over a billion dollars by the end of the decade. And to a considerable extent it's all at the mercy of IBM; a blockbuster announcement this year or next, and the system designs are obsolete – the hope of sales outside France, vanished.

But, you may say, 'twas ever thus – IBM whistles and everybody else dances. True, but in the French case there was an alternative: the solid state technology itself. They did not have a huge internal market like the Japanese, demanding a systems capability, and heavy marketing. But they had good basic science, a major nuclear establishment, and lots of proud money. How much better to have invested in a major LSI, and soon a VLSI, development and manufacturing facility. Buy the computers from IBM or ICL or Univac or Fujitsu – IBM manufactures in France, employs more French than any other electronics company; Fujitsu would relieve the depression of American dominance.

There is as yet no really powerful pan-European technological combine, at least in our field. Unilever, Shell, Nestle come close. Could not Siemens and Ferranti and a new French enterprise come together, as Unidata never could, and make a powerful challenge to the Americans and the Japanese, and even to IBM, in the chip business?

It's probably too late. The die is pretty definitely cast. But what an opportunity! Of course, the pride of politicians and customers is more easily gratified by shipments of room-sized computers. But down inside, the boast is made hollow by a thimbleful of tiny 16K chips the French will not make.

Herb Grosch

Charge System Design Errors Cause Needless Chaos

The Taylor Report
By
Alan Taylor, CDP

California First Bank runs a Master Charge operation and, like all other Master Charge franchisees, must use the information it is given. The information that gets transmitted to franchisees is simply not very good; when trying to massage it to usable form, some design errors undoubtedly occur. But there is simply no reason for a single transaction to encounter so many design foul-ups as one did recently.

It all started on March 12 when Continental Airlines Houston office charged and accepted $20.83 for an air-freight package being sent by Larry Nebel, Tymshare's central region manager. Although Texas, like any other state, insists that businesses have local addresses, the Master Charge system neither cares about where a charge is made nor who accepts it from the customer. Their sole concern is where payment is made – in this case, to Continental Airlines in Los Angeles.

The fact the system gives the identity of who receives the money, rather than who accepts the charge, is a well-known problem which California First must have been aware of when they designed their own system of receiving money from its card-holders in due course.

Apparently, on April 2 Continental got around to depositing the item with its bank. The fact the charge occurred in Texas had been lost, as was the fact it was a service that Continental provided. All that remained was an 11-digit reference number, the deposit date, the amount and who received the cash that was now wanted from Nebel.

The April monthly statement went out to Nebel a few days later, but the charge was not included.

Four weeks elapsed after the Continental deposit before it was posted on the California First's April 30 accounts. Then, on May 6, the system churned and produced both a statement and a Descriptive Transaction Enclosure, the relevant parts of which are reproduced in the box.

Nebel received both the enclosure and statement and examined them. Now he had two documents, but they couldn't be tied together. The California First people had seen to that by playing ping-pong with where to put what.

The idea of risking redundancy by repeating anything other than the amount obviously frightened them, thus three design errors resulted.

- Error Number 1. The enclosure has a reference number. If the statement had one the problem would have ended there and then. But California First omitted that from the statement line, despite plenty of room.

- Error Number 2. The statement has a posting date. If the enclosure had one, it would have helped Nebel tie the two together. But California First went further than merely omitting the posting date from the enclosure; it provided as one of the four fields a "date" – that could mean anything or nothing.

- Error Number 3. The enclosure has a merchant identification which is unavoidably wrong as mentioned. Even so, it does permit some continuity to be used between the enclosure and the statement. The statement, however, omits the merchant because by now it's just a book entry on Nebel's account. But California First thinks providing lots and lots of room on the statement for a 'description' practically forces them into describing something – so, not having any idea as to what the charge is for they default by printing "purchase." Perhaps they think that such a label is better than the more accurate word 'charge'.

Nebel, upon receipt of this material and the March 12 air freight charge slip makes a table showing the three dates: March 12, April 2 and April 30. He finds he doesn't know whether there are one, two or three items.

The forms designers of California First have done a lousy job of tying together even their own statement and its enclosures. Amounts are simply not enough. Many duplicate amounts appear – particularly from airlines.

Dangerous Terminology

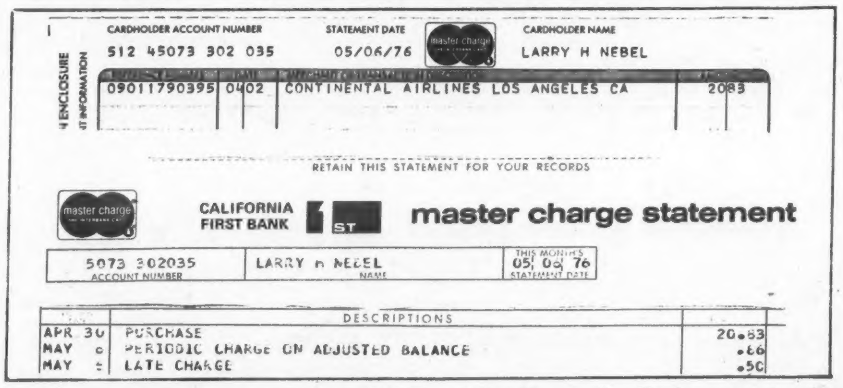
Default descriptions, in particular, should be only very hesitantly used. To call anything a purchase, when it is now known what really happened, is simply dangerous. Even the horror of "retail transaction" is a little better than "purchase." It is much less likely to be wrong.

And don't think because someone will argue "But you can purchase a service . . . and therefore we are technically correct," that the design is not wrong. Purchase, unidentified as being a noun or a verb, indicates that something tangible, like a box of chocolates, was obtained.

Second Design Crash

This second level design crash is just as destructive to DP credibility as the basic credit card merchant/depositor in due course confusion. But it is a lot less excusable. It takes time to create a network that carries both sets of data around the system and we don't have one.

California First just doesn't get the data to set that right. But it can tie its own pieces of paper together a bit better than it is doing just on its own authority. Then it would be reducing rather than increasing the basic problem. Here's hoping that it – and others – start doing so soon.



CARDHOLDER ACCOUNT NUMBER	STATEMENT DATE	CARDHOLDER NAME
512 45073 302 035	05/06/76	LARRY H NEBEL

09011790395	0402	CONTINENTAL AIRLINES LOS ANGELES CA	2083

RETAIN THIS STATEMENT FOR YOUR RECORDS

CALIFORNIA FIRST BANK master charge statement

ACCOUNT NUMBER	NAME	THIS MONTH'S STATEMENT DATE
5073 302035	LARRY H NEBEL	05 06 76

	DESCRIPTIONS	
APR 30	PURCHASE	20.83
MAY 6	PERIODIC CHARGE ON ADJUSTED BALANCE	.66
MAY 6	LATE CHARGE	.50

The top entry shows part of the April 2 Descriptive Transaction Enclosure sent out in support of the April 30 entry (bottom) and the May 6 statement (middle). How is someone supposed to tie these together except by the amount?

To Speed Information Flow

More Practical Training Needed for Systems Analysts

Reader Commentary

By C. A. Knepp
Special to Computerworld

The world of DP is a rapidly changing and progressive one. It has given us the opportunity to bridge communication gaps within our companies and between geographic boundaries. However, all too often we aren't really closing the gap, but widening it.

System Information Flow (SIF) can be complex and we should investigate why. The complexity boils down to our most prized resource: people.

Are we utilizing or do we even have available the adequately trained people to assure the best possible SIF? In many cases, we don't, particularly in reference to the information system or system analyst specialists.

A system analyst or information system specialist, simply stated, should be a liaison between top management, programming and operations. He is the initial investigator in any company's overall design of an information network or flow, whether it be automated (semi or fully) or a manual flow.

At this point in time, educators have pretty much agreed in recent years on a basic system analyst definition through four unique phases: the study phase, the design phase, the development phase and the operation phase.

The tragic truth, however, is that very few academic institutes today offer an in-depth educational program for the area, although many are convinced the time to begin one is approaching.

What must be done to bridge the gap between management, programming and operations? The answer is simple – adequately trained system analysts ready to take their place in fulfilling the needs and possessing the capabilities of communicating with management, programming and operations.

To go one step further in our definition, one might ask then exactly what will a system analyst do? The answer is in part suggested by the educators phase definition. But let us look at a typical example of how it could ideally work and then later at how it is often done presently.

Top management determines the need for additional information, say an expansion of the present system into a newly created division. The request is turned over to the system analyst, who in turn approaches phase one; a clear definition of the problem.

This report probably would then be channeled back to management for review. At this point, the interpretation is directed towards management comprehension. If the report is deemed feasible, phase two is implemented, that being a complete design of the information network, including system implications and report specifications and programming requirements.

Phase three would be development, including implementation planning, testing, training, conversion, equipment installation and so on, all coordinated through programming, operations and management.

The final phase is the actual implementation and performance evaluation. This phase should be channeled through all three areas and at all three levels of comprehension. This should allow for the best possible information flow design and allow the expertise of all three areas to be fully realized – without an undue burden or misunderstanding in any level.

However, all too often the following is actually what occurs. Top management perceives the need for additional information, through a possible expansion of the present information system for a newly created division. Management approaches the programming department, which in turn is left with no alternative but to complete the first three phases under their own interpretation, which management may or may not fully comprehend.

A conclusion one could draw from the above correlation is that delegating separate and distinct areas of responsibility, channeled through a system planning department may be a tremendous advantage and, in the long run, prove cost justifiable.

Knepp is DP department head at Bank Virginia Service Co. and curriculum advisor and instructor at J. Sargeant Reynolds College.

Consumers Unenthusiastic About EFT/Privacy Rules

By William O.Adcock and Anne M. Moore
Special to Computerworld

"Legislating for complete privacy may be about as effective as legislating against sin." That is the blunt assessment of a federal regulator. It also describes the frustration felt by other consumer advocates who are concerned about privacy protection in electronic funds transfer (EFT) systems.

Consumerists generally agree that personal data privacy is one of the most important EFT issues. However, major consumer organizations are not enthusiastic about sweeping legislative safeguards similar to the Privacy Act of 1974 which pertains to federal records systems.

These findings are based on a study of EFT issues conducted by Payment Systems Research Program of Payment Systems, Inc. (PSI). The PSI study included personal interviews with representatives of consumer groups and regulatory agencies, as well as a review of Congressional testimony, policy statements, and other published material related to consumerist views of EFT.

The PSI study concluded that only one privacy protection measure is strongly supported by most consumer advocates. A strengthening of rights of redress is most often favored. Consumerists believe that legislation is needed to make it easier for an individual to collect damages if personal data privacy is abused.

Consumer Federation of America (CFA) included such a provision in its "EFT Policy Resolution," adopted in January 1976. CFA proposed that unauthorized use of the detailed economic profiles of an individual (information made more easily available because of EFT) should be outlawed, with strict civil penalties for violations.

Ralph Nader's National Public Interest Research Group (NPIRG) included a similar remedy in its "Model EFT Code." The Nader group proposed that any financial institution guilty of unauthorized disclosure of information about an EFT card holder should be liable, to the individual, for $1,000 plus court costs and attorney's fees.

Support for a stronger right of redress is not surprising. The two major federal privacy laws, the Fair Credit Reporting Act of 1970 and the Privacy Act of 1974, both provide for collection of damages. It may seem surprising, however, that consumerist demands have been this limited.

EFT privacy concerns generally pertain to fully developed EFT systems. The long-term nature of these concerns may be one of the reasons consumer advocates have been slow to support other legislative proposals now under consideration.

For example, Melinda Mount and Robert Thompson, consumer affairs specialists for the Federal Home Loan Bank Board, questioned the need for privacy legislation at this time, since their agency regards EFT as "experimental."

Peter Schuck, Washington director for Consumers Union, noted pragmatically that "any such legislation would take considerable time to get through, if only because the Privacy Act with respect to federal agencies has only recently gone into effect and Congress will want to see how that works out."

Michael Sterlacci, acting deputy director of the Office of Consumer Affairs, has been the most outspoken consumer advocate on the subject of EFT privacy.

"Completely unrestrained, the ultimate EFT system could reveal almost everything about an individual, even to the point of mercilessly tracking his movements. Consumers legitimately fear a system which centralizes and coordinates data about their lives that gives a clear picture of their life styles, political, economic and religious beliefs, opinions and interests," he said.

Despite these concerns, Sterlacci does not support new privacy legislation. He believes consumers now have adequate protection because "the bulk of separate checks in the system makes data correlation difficult."

Reader Commentary

Interviews with consumer advocates suggest another reason why privacy legislation is not more widely supported by consumerists: Most of the proposed new laws do not address the major fears about EFT privacy.

Most new proposals, as well as Fair Credit Reporting and the more recent Privacy Act of 1974, only define responsibilities and liabilities of records keepers. Consumerists are also concerned about privacy abuses by unauthorized third parties and by government agencies.

Unauthorized access, particularly through remote penetration, is a difficult subject for legislation. The EFT Policy Resolution of CFA includes a demand that "technological means should be developed to minimize computer fraud and computer theft of the data stored in a computer system." The CFA resolution did not include any specific recommendations for enforcing this demand.

NPIRG recommended, in its Model Code, that maximum criminal penalties for computer penetration be established of a $10,000 fine or ten years imprisonment or both. NPIRG also proposed that banks be required to notify all customers if they found that computer files had been "tapped."

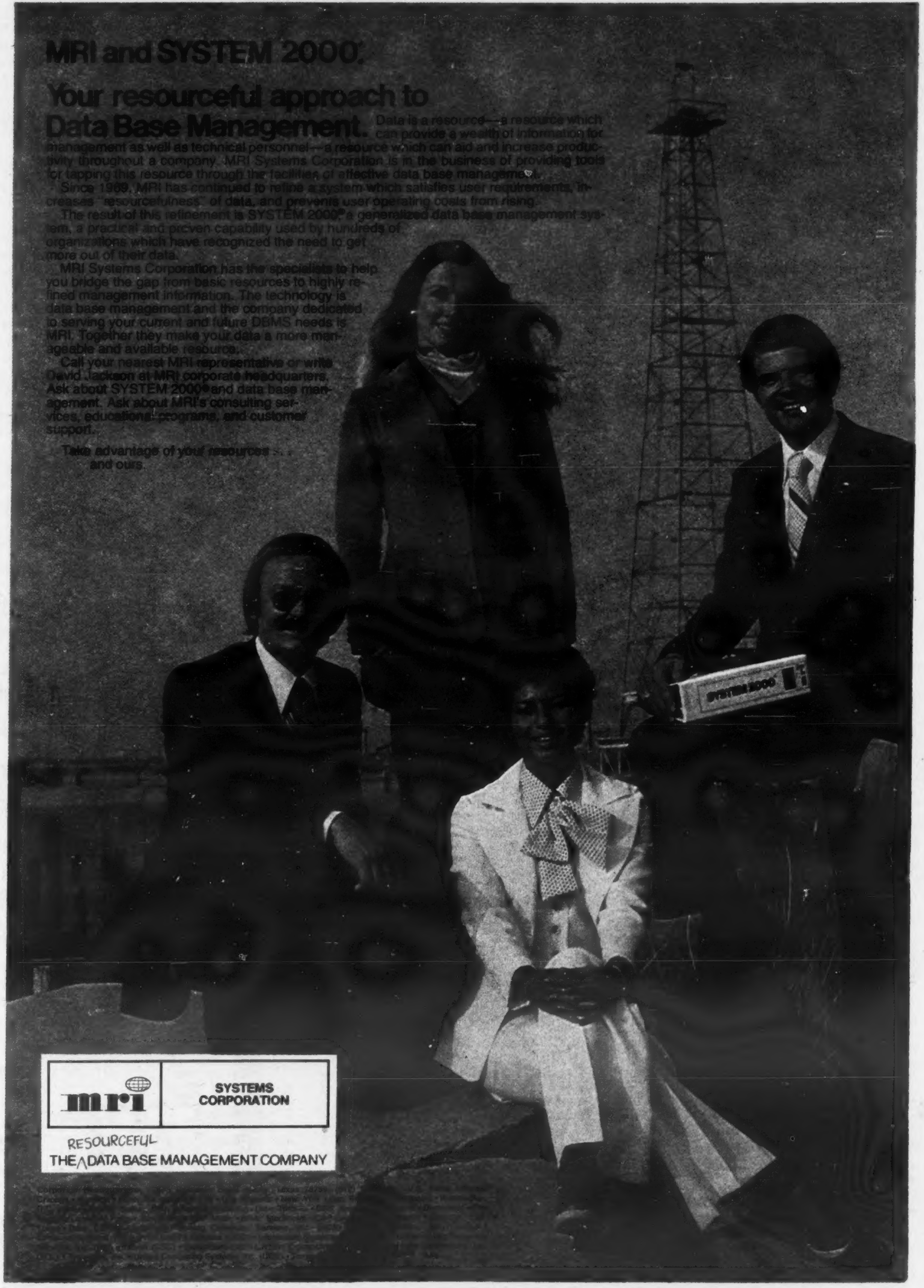
Even Jonathan Brown, banking issues specialist for NPIRG, is skeptical about the effectiveness of these types of provisions. "I'm not even sure they can devise means to find out if someone is tapping it, let alone stop it. I'm sure they can't stop it," he said.

"One of the issues is how much are banks willing to spend to find out."

Many of the concerns about governmental abuse of EFT privacy relate to systematic use of these systems for surveillance purposes. Sterlacci's statement about "mercilessly tracking his movements" is one example. The NPIRG Code includes a reference to "the spectre of political surveillance."

It is not clear what remedies they will eventually choose to emphasize, in addition to rights of redress. It is not likely, though, that consumer advocates will remain silent on an issue they consider to be important.

Adcock is a marketing consultant and Moore a senior associate with the Payment Systems Research Program of Payment Systems, Inc. (PSI), Atlanta, Ga.



Professionalism Lack Leading to DP Unions

. . . And in This Corner

By Kenniston W. Lord Jr.
Special to Computerworld

More than a year ago I was chastised by Ashley Goldsworthy of Australia for stating that unionism was underway in Australia and that the rank-and-file DP practitioner feared it. However, communications recently received from Australia indicate that the issue is still not resolved.

And while it may not be resolved in Australia, such movements are beginning to stir in this country.

A Tennessee court's decision about programmer overtime might have been the tip of the iceberg. The ruling by the U.S. Department of Labor that data processing activities are not considered "professional" may well add impetus to the movement.

Right under our noses there are some unionizing activities underway, all conducted very quietly and discretely. Already State and Municipal data processing workers around the country are, or are becoming unionized.

So the move is under way.

Several Reasons

What could cause DP people in this country to become unionized? There are several obvious reasons.

First, we have not yet come to grips with what constitutes a profession. We cannot lay claim to being professional because we cannot yet define it. If there are any overt industry efforts to obtain professional credibility, we're backing into them, rather than aggressively pursuing them.

Next, despite the Tennessee and Labor rulings, there is still strong evidence of excessive and uncompensated overtime in many organizations, disguised under job title changes and job-retention pressures. It is no secret that there are data processors in this country who earn an effective hourly rate approximating the minimum wage. Sooner or later, some DP practitioners will become tired enough of that to do something about it.

Fostered by Dissatisfaction

Traditionally this country's unionization activities have been fostered by either the worker's dissatisfaction with exploitation or by foreign competition, as in the case of shoes, textiles, or other commodities produced overseas.

Workers have sought protection from foreign competition by the encouragement of protective tariffs and other forms of collective action. Consider that today much of the hardware you are using, in component form, at least, originated in Japan or Taiwan. Whole devices, specifically peripherals, are being marketed in this country from such sources. Initially, that seemed to be little problem, as there was a vast difference in quality. But foreign quality standards have risen.

Major Impact

Where the major impact upon DP practitioners will be, however, is in the areas of service. It is now possible to get data entry services in the Orient at a fraction of the cost. The turnaround is relatively short, but more importantly, the accuracy is high.

Some of the software currently in use in this country originated in and has been imported from Western Europe. And it works; it's capable; and it's polished. One wonders just how long it will be before systems and programming services are equally available. When they do become available on a large scale, a coalescing force for unionization will exist.

The Great Minds

The great minds of the Orient or Western Europe should be free to market their product wherever they can. But it should be obvious to the casual observer that import restrictions and protective tarriffs might be just as applicable to software and hardware products as they are to shoes and textiles; and it is a valid possibility that such restrictions may well lie in the future of the country.

I, for one, would not like to see a DP union established in this country. There are at least two reasons. As a believer in Right-to-Work legislation, I should not like to see competent people subjected to the traditional union-member role.

More specifically, however, I'm firmly convinced that this is, or could become, a profession in the traditional definition of professionalism, with high standards of knowledge, conduct and practice. There are questions in my mind about the quality levels of work performed by the two types of people.

Happening Now

But, like it or not, I see it happening. It's happening because DP people are allowing it to happen, through unawareness and lack of positive action in the professionalism issue. Like everything else we seem to accomplish, we most probably will not move in that direction until either it is too late to influence the outcome or the single coalescing force comes to bear.

In either case, it is presently in company managements' best interests to ignore either alternative. They do not have to "divide and conquer" for our people are already so divided that no positive professionalism efforts are under way. There may well be some surprises waiting in the wings.

Unionization is clearly a possibility so long as we continue to do nothing.

Comments Sought on Proposed Standard for Mumps

By Don Leavitt
Of the CW Staff

NEW YORK – Mumps. A strange name for a programming language.

Programming language? Isn't Mumps a childhood disease?

Yes, *that* Mumps is a disease, but there is a piece of software also known as Mumps. It started as a single installation's solution to a particular problem and was implemented on a particular computer system.

The installation was a hospital and that accounts for the medicinal ring to the language's name. Today, although still known formally as the Massachusetts General Hospital Utility Multiprogramming System, Mumps has been applied to a growing range of applications in and out of the medical field.

It has also been adapted to a growing range of hardware hosts – some 18 or so at last count, all in the minicomputer or small business system range.

Beyond that, to the surprise of many who know of programming languages such as Cobol, Fortran or PL/I, Mumps is already going through an American National Standards Institute (Ansi)-approved procedure under which it too may become a standardized language in the foreseeable future.

The proposed standard is now available for comment from the public and, at the same time, for acceptance or rejection by a specially selected "jury" of some 200 people across the country. The combined comment/ballot period ends later this year.

Unlike the other Ansi-considered languages, however, Mumps didn't reach this stage of the standardization process through Ansi's X3 technical committees. That route seemed marked by infrequent meetings of volunteer participants producing results, typically only after long stretches of time.

Under X3, for example, any suggestion that a given language would be a good candidate for standardization is considered first by an ad hoc group set up to evaluate the technical and economic feasibility of standardizing the candidate language.

Instead of that, a number of Mumps users got together several years ago, recognized standardization was the best way to protect the language as its implementations grew and formed the Mumps Development Committee (MDC).

With strong support from the National Bureau of Standards (NBS), a long-time Mumps user, the language became the first in which standard development work was fully funded.

MDC – and NBS – saw a need to clarify the language in three separate although admittedly related areas. Part I of the standard is a narrative description of Mumps; it contains an overview of the language specification, a definition of the static syntax metalanguage and details of the static syntax.

Part II, now entitled the Mumps Transition Diagrams, is a formal definition of the language described in Part I. It utilizes a form of line drawings to illustrate syntactic and semantic rules governing each of the language elements.

Part III, the Mumps Portability Requirements, identifies constraints on the implementation and use of the language for the benefit of users interested in achieving Mumps application code portability.

NBS Handbook

The three parts of the proposed standard were brought together by NBS, edited by Joseph T. O'Neil of the bureau's Institute for Computer Science and Technology and issued last January as NBS Handbook 118. A foreword, carrying the imprimatur of Ruth Davis, director of the institute, called Mumps "a high-level, interactive programming language developed for use in complex data-handling operations."

Urged on by various users, MDC approached Ansi in late May to determine the best route for Mumps through the standardization process. Since a proposed standard already existed, Ansi sanctioned the non-X3, concurrent comment/ballot period and worked with MDC to develop the appropriate mailing list for the voting.

Spokesmen for both NBS and MDC noted that, in this procedure, Ansi takes into account the comments about the proposal as much as the absolute count of votes for or against it. Thus, neither organization would speculate on the final outcome at this time.

Copies of the standard for those who might like to comment are available from Jack Bowie, chairman of the MDC, at the Laboratory of Computer Science, Massachusetts General Hospital, Boston, Mass. 02114.

Comments should be sent to Bowie or to Marie Hogsett, Ansi, 1430 Broadway, New York, N,Y. 10018.

'Epat' Adds Audit Trail, CICS Link

BURLINGAME, Calif. – Version 2.1 of Software Design, Inc.'s (SDI) Epat tape management system for DOS and DOS/VS users supports two newly available features – one providing a tape-processing audit trail, the other an interface with IBM's Customer Information Control System (CICS).

The update also includes extensions to the VM/370 interface providing Epat tape protection and control to "any number" of virtual machines operating in that environment and the capability to maintain the Epat catalog "anywhere" on IBM 3330-II double-density disk drives.

Epat itself was described as a catalog, control and volume recognition system. It supports both Automatic Volume Recognition and interpartition use of tape drives so that tapes can be mounted on any available drive, SDI said.

The audit trail feature captures and logs all tape processing done in an installation, including both labeled and unlabeled files. Also included is a cross-reference report, detailing by data set name which programs are using each file as input or output, the spokesman added.

The CICS interface allows the user to display tape status and control information from the Epat catalog on any CICS-supported device. It therefore provides immediate operationally useful data, he said, while the audit trail feature generates management information.

Internally, Version 2.1 includes changes to accommodate the added features and to make generation of copies of Epat easier. A modification to the Tape Copy routine allows multiple files, even if unlabeled, to be stacked on a single reel.

The optional tape-processing audit trail feature costs $50/mo; the CICS interface feature is available for $35/mo. The basic Epat package rents for $295/mo and is required before either of the features can be used, the spokesman noted from 880 Mitten Road, Burlingame, Calif. 94010.

'IMP' Eases RPG Impasse

NEW YORK – RPG-II leaves much to be desired in handling data subelements, according to George Warner, DP manager for Aberdeen Manufacturing Corp., who offers a solution to the problem to any user who wants it.

As he describes the situation, RPG does a "superb job" allowing the programmer to define an input record or an actual output record, "but if your need isn't real I/O, watch out!"

When Aberdeen wanted to use RPG on Cobol-oriented files, Warner went on, "we found situations in which the random keys were composed of one or more packed fields, plus nonpacked fields – a real challenge to RPG."

Warner turned to "a simple aid" written in Assembler that uses dummy SPECIAL files which appear to RPG as exception output files and demand input files. The aid, called IMP, can both compose and decompose data areas immediately in core through output/input RPG detail file areas, which give access, according to Warner, to the indicator logic features as well.

The installation extended this ability to avoid "confusing and lengthy" Move Left Portion (MOVEL) and Move Right Portion (MOVE) series of Calculation statements. For the first time, Warner said, complex print segments with "multiup" output "became a joy instead of a drudgery."

To get the 370 Assembler program on 80-column cards and instructions for mainline use, "just drop a line" to Warner at Aberdeen, 16 E. 34th St., New York, N.Y. 10016.

'Alloc I' Manages DOS Data Sets

NEW YORK – Alloc I, a DOS and DOS/VS dynamic disk space manager from C-S Computer Systems, Inc., allocates space for permanent and temporary sequential files and eliminates the problems of manually mapping and maintaining disk files in a multipartition environment, according to the vendor.

The package is made up of three programs which can increase the amount of available disk space from 10% to 40%, a spokesman claimed.

The Alloc program itself sets aside the sequential data set (SD) output space location based on user-supplied definitions of how much space will be needed for the job. The allocation routine also sets up protection for the allocated space until an expiration date given by the user.

The Scratch program frees disk space without a service request being issued. The deletion of files is done during the job preparation, the C-S spokesman explained.

The routine called Status gives the user information about the overall amount of available space on a disk pack and the size extents involved. This program is useful when the user is not sure if there is enough space on a pack, he added.

Enhanced versions of the package already under development will in one case handle VS-based operations "even more effectively than this version" and, in another, support indexed sequential and other file organizations, the company said.

Alloc I currently costs $3,800 or $350/mo for 12 months under a rental/purchase plan, the spokesman noted from 116 John St., New York, N.Y. 10038.

Letters Start With 'Word/One'

NEW YORK – As a specialized application of its Word/One text processing system, Bowne Time Sharing, Inc. (BTS) has implemented a personalized consumer correspondence management system on its network, according to a spokesman.

The new capability enables corporate and government agency subscribers to store letters and paragraphs on the BTS computer, retrieving and fitting them together as needed to thoroughly personalize all their consumer-directed correspondence, he added.

The basic letters and paragraphs are keyed in through an IBM 2741 or similar teletypewriter and stored at BTS. When letters are to be generated, the identification code of the desired text is keyed in after the intended recipient's name and address.

Special wording, to be inserted at predetermined points within individual letters created from the stored text, is entered after the basic text codes. These inserts may include, for example, the addressee's name, the product or service in question, retail locations, prices and the writer's action or recommendation, BTS explained.

In addition to producing user-tailored letters, the service can store selected information relative to each inquiry or complaint, which can then be used to generate meaningful reports and analyses, the firm added.

The service can be used to answer specific inquiries or complaints or as the base for bulk mailings, when the text files are used along with a name/address file supplied by the client.

BTS has regional communications and service centers in 10 cities throughout the country; the network is headquartered at 345 Hudson St., New York, N.Y. 10014.

Users' Routines to Highlight Inexpensive Software Catalog

NEWTONVILLE, Mass. – Based on the belief that many user sites have a lot of in-house developed routines that could be used by others – if they knew about it – the *1977 Computer Software Directory* is being planned as a high-volume, low-cost publication, according to the publisher.

To be introduced in January with supplements in April, July and October, the directory will include descriptions of commercially developed and marketed systems as well as others available directly from users, he said.

In addition to the base publication and its updates, subscribers can also obtain detailed product reports on individual packages and on groups of systems. These are described as more technical in nature and are expected to include user references in addition to detailed management level descriptions of the products.

Finally, subscribers will also have the opportunity to participate in product rating surveys, conducted semiannually for all products in the directory. Ratings earned through these surveys will be displayed next to the product descriptions, the publisher noted.

Annual subscriptions to the directory are available for $7.50, plus $2.50 for postage and handling. The individual product reports are to be distributed for only a small postage and handling fee, the publisher said.

The fee for a 250-word writeup in the directory and a one-page product report to be sent in answer to inquiries is $50. A 500-word entry and a two-page product report costs $75/year, he added.

Organizations listing products are sent monthly summaries of all requests about their products and may purchase reprints of the product reports in bulk. They also receive a free copy of the directory.

The *1977 Computer Software Directory* can be reached through P.O. Box 270, Newtonville, Mass. 02160.

Securities Database Added on GE Network

ROCKVILLE, Md. – Detailed information on some 28,000 securities, updated daily, and a set of retrieval and reporting tools are combined to make up the Securities Database System (SDS) now available on General Electric's worldwide Mark III remote-computing network.

Securities covered include common and preferred stocks; corporate, municipal and government bonds; stock options; mutual funds; and foreign issues traded in major U.S. and Canadian exchanges, GE said. There are 80 items of information on each security in the data base.

Updated nightly by Telstat Systems, Inc., the files include a minimum of 10 trading days and 53 weeks of pricing data. They also include up to two years of time-series information on earnings, dividends, interest payments and special distributions, the network continued.

The database is directly compatible with the Data Management System (DMS), a tool for producing ad hoc retrievals and standard reports that has been on the network for some time.

Financial analysis, tabular formatting, statistical analysis and graphic plotting can be performed through other GE routines, the spokesman noted.

In addition, special programs and subroutines are said to be available for retrieving the latest information for any security and comparing the current market value of a portfolio against its original cost, he said.

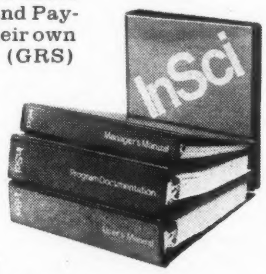
GE's network can be reached from locations in North America, Europe and the Far East. The Information Services Division, responsible for Mark III service, is at 401 N. Washington, Rockville, Md. 20850.

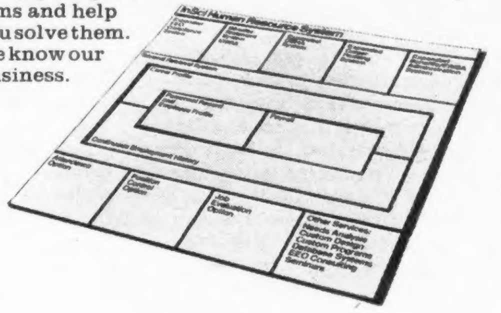
DYL-260 Linked to IMS

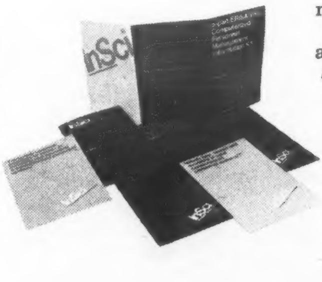
ENCINO, Calif. – An IMS and DL/I interface module recently introduced by Dylakor Software Systems, Inc., is intended for use with its DYL-260 multifunctional report generator package.

The module is designed to operate under DL/I-Entry and DL/I in DOS/VS environments, IMS/360 in OS shops or IMS/VS in VS installations.

Described as an optional module, it is available to DYL-260 users for a one-time cost of $5,000 or $80/mo on lease, the company noted from 16255 Ventura Blvd., Encino, Calif. 91436.







Dear Computerworld:

I (borrowed) (stole) (shared) (copied) this issue of *Computerworld*, and it made me:

☐ PROUD
☐ SKEPTICAL
☐ ANGRY
☐ PLEASED
☐ INVOLVED
☐ AWARE
☐ CURIOUS
☐ EXCITED
☐ DEMANDING
☐ FURIOUS
☐ INFORMED
☐ SURPRISED
☐ ALL OF THE ABOVE

☐ PLEASE ENTER MY SUBSCRIPTION
(details on back)

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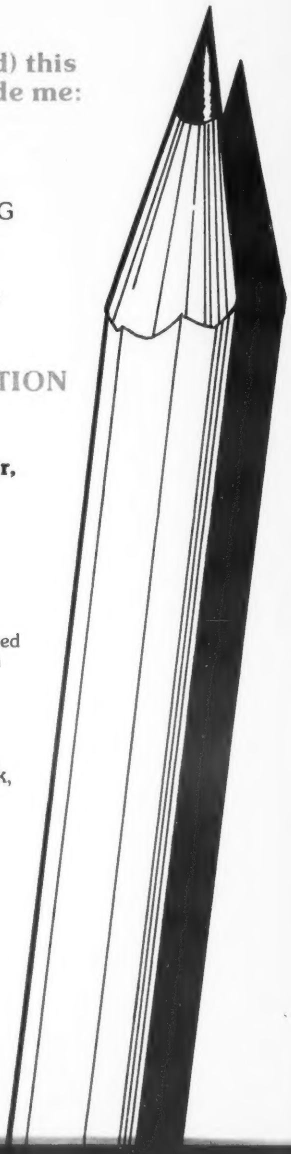

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Hiring Practices Too Rigid, Reject Human Qualities

By Jack Stone

Special to Computerworld

The Human Connection

Dear Jack:

A number of fallacies related to the hiring and promotion of programmers and analysts perpetuate the situations you indicate when you wrote "human relations in the DP environment... are generally in a deplorable state" [CW, July 19].

Fallacy 1: A person's past record is a sole measure of the person's capability.

This assumes a person has always worked in jobs he enjoyed and for which he was well suited; it fails to recognize that " square pegs" in "round holes" are rampant. One recent survey estimated nearly 95% of the working people are locked into treadmill jobs. This has been attributed to the difficulty in changing job functions -- as a result of the broad application of this fallacious idea.

Fallacy 2: Job background "requirements" must be heavily based on technological specifications.

These specifications have become specialized to the point of being idiotic. An applicant has to be a super programmer and super analyst combined to meet typical job requirements. The use of this policy is probably geared to the illusion of receiving "more bang for the buck" from new employees.

Fallacy 3: The qualified candidate must closely meet the "experience" requirements of the job, often a super specialization of an application area.

Here we see a myopic failure to realize intelligent new hires can successfully apply classic systems principles and methods to new application areas. This experience blindness relegates job candidates to pigeon-hole boxes from which they can rarely move into new areas.

Fallacy 4: Good performance in programming work is a prerequisite to a systems analyst position.

Here is the tired fallacy of promoting a great technician to a position in management.

Analysis and programming are widely different job functions and require widely different kinds of personal interests, characteristics and abilities. The continued use of the programmer-to-analyst track forces people into preconceived molds.

Fallacy 5: When a person reaches 40, he is too old to perform well in technical DP-related jobs.

This has been disproved over and over again in practice – yet still lingers, continuing its negative influence on hiring otherwise perfectly acceptable candidates.

As long as these fallacies dominate DP hiring policy, "people problems" will dominate DP managers' attention, raising serious doubts about their effectiveness and stalling their acceptance into general management.

A Concerned Analyst.

Dear "Concerned":

Hiring technical specialists to fill current needs is a widely accepted practice, but it falls short in two important respects.

First, this narrow focus may be acceptable for positions in which the individual works in isolation, but they are rare in modern computer centers. As we all know, successful installation of complex applications demands considerable teamwork, communications, and other interrelationships among all those who participate in the system process. Yet these and other factors related to personal leadership are essentially ignored by recruiters for most organizations.

Second, the narrow focus rarely produces candidates who are qualified for future DP management and supervisory positions. Coupled with the almost total void of effective DP management development programs, this has led to the severe shortage of real leadership we face today.

Are recruiters really that narrow? The July 19 issue of *Computerworld* contained 58 position announcement ads in 420 column-inches. In that entire space, only seven sentences made reference to interpersonal capabilities of candidates.

Just one advertiser was bold enough to declare the "ability to communicate (is) as important as a logical mind."

Wouldn't it be refreshing to read sentences such as these in industry ads for programmer /analysts:

"Candidates should submit a 2,500-word essay describing their professional goals and objectives and why they feel their efforts will be compatible with the goals and objectives of our company."

Or: "Applicants should prepare a two-hour management presentation of their approach toward DP systems design and development . . ."

Or: "Candidates should prepare and conduct a half-day seminar involving our systems analysis group . . ."

Readers are invited to write to Stone, c/o Computer Education International, Inc., Suite 222, 2233 Wisconsin Ave., Washington, D. C. 20007, outlining questions, issues or situations pertinent to human relations in the DP setting.

Letters should be no more than 350 words long and include the name, title, organization, and address of the sender, although that information will be withheld from publication if requested.

Structured Future Theme of Seminars

NEW YORK – Structured design and programming will be the theme when Jerry Weinberg and Ed Yourdon team up later this month to present one-day seminars entitled "The State of the Future: The Design Decade" in five cities across the continent.

The lecturers will be in New York, Washington, Toronto, Dallas and San Francisco from Sept. 20 through Sept. 24, according to Yourdon Inc., which is sponsoring the seminars.

Registration fee is $195, a spokeswoman added from the firm's offices at 1133 Avenue of the Americas, New York, N.Y. 10036.

Systems Manager Warns:

Interview Requires Planning to be Effective

By Don Leavitt
Of the CW Staff

CLEVELAND – The interview should be the prime source of information or input to almost any problem systems people have been assigned to solve.

Unfortunately, however, if an interview is not well planned and then controlled, it may produce nothing of value, according to Albert Collard.

Writing one of the chapters in *Peopleware in Systems*, published by the Association for Systems Management (ASM), he noted that without pre-planning, much valuable time can be wasted. And, he added later, without debriefing afterwards, points made during the interview may be overlooked by the interviewer.

Planning for any particular interview should begin with a review of the company or department organization chart, corporate procedure manuals and job descriptions. The plan should include a statement of objectives and results to be expected, which will differ with the level of management to be interviewed, Collard noted.

The Human Connection

Systems manager for Eastern Airlines, he went on to say it is important to give the interviewee a time schedule. "Everyone's time is valuable and you're more likely to get 30 minutes of a senior executive's time if you have a plan that includes a time table."

Once into the meeting "the most important thing an interviewer can do . . . is listen." The interviewer should speak only to clarify a point, bring the discussion back to the subject or terminate the interview, he said.

"With a difficult interview, it may be necessary to prompt the interviewee with questions," Collard continued, "but again, remember that you are there to listen."

Note-taking may inhibit the interviewee's responsiveness, he warned, so the analyst should observe the reaction to the note-taking early in the interview and abandon it if it seems to be getting in the way.

Although many analysts like to have as good an idea of the current situation before an interview, "never be afraid of asking a 'dumb question,' because it often forces the interviewee to explain in detail and you may uncover information which, otherwise, you may never have been given."

It gives the interviewee an opportunity to demonstrate his expertise and "it keeps him talking," Collard said.

The "dumb question" approach is particularly useful when interviewing older clerical employees, he added. "If you do not completely understand what they are doing, ask them to describe it in detail. Persistence often pays off."

The analyst should frame questions to encourage more than "Yes" or "No" answers, Collard stressed, noting "How do you prepare a bill of lading?" is far more effective than "Is this the way you prepare a bill of lading?"

Ultimately, one of the best ways to get the interviewee involved is to ask something like "How do you suggest we improve the way we are doing this?" he continued.

But, he warned, it may be difficult getting people to volunteer their ideas of possible solutions in an organization where a suggestion award program exists. A "fully-documented solution to your problem [may be] sitting in a clerical worker's drawer waiting for the next suggestion award program," he said.

An important part of the training of systems analysts can be a debriefing session between the analyst and his manager shortly after an interview. The analyst should have time to document the interview, but the manager shouldn't wait too long for his review of what had been accomplished, Collard indicated.

At the debriefing, both the plan and the results of the interview should be discussed. The level of detail uncovered by the interview is important to analyze at this point, since it is a good clue as to the ability of the analyst to conduct an interview, he said.

People in Perspective

CLEVELAND – *Peopleware in Systems* is a soft-cover 85-page collection of articles by various authors, all focused on creating "working environments that encourage growth, achievement and recognition," according to the Association for Systems Management (ASM), which has published the book.

The 18 articles are divided into sections on managing, interviewing, motivating and training people. The book is available for $6.50 from ASM headquarters, 24587 Bagley Road, Cleveland, Ohio 44138.

Deltak Adds Program On Design Structure

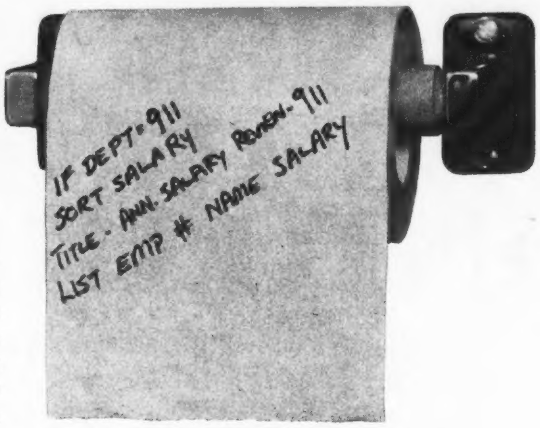
SCHILLER PARK, Ill. – Structured Design, a nine-course, video-based training program from Deltak Inc., fits logically with the firm's existing courses on structured programming, top-down design and programming team effectiveness, a spokesman asserted.

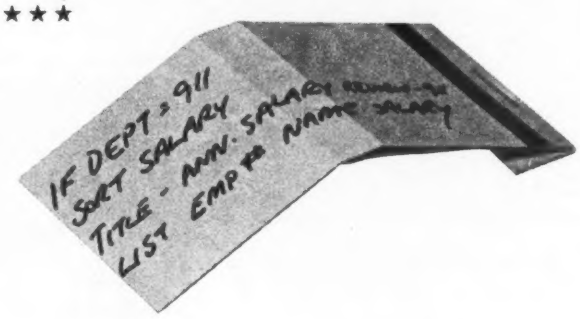
Developed with Larry L. Constantine, who has written books and lectured on the subject for several years, the series covers various aspects of the design phase of DP projects, from an introduction to the subject through a discussion of management considerations.

The courses are organized so that they can be used separately or as a whole program. Each course is estimated to take the typical student two to three hours.

Although Structured Design can be purchased, a Deltak spokesman expected most users to acquire it for limited periods of time under rental plans, which provide access to some 3,800 individual courses.

Deltak is at 9950 West Lawrence Ave., Schiller Park, Ill. 60176.





In Early 1977

Seattle Bank to Become First User of Bell TNS

By Ronald A. Frank
Of the CW Staff

SEATTLE – The Seattle First National Bank will become the first user of Bell's Transaction Network Service (TNS) early in 1977 when a credit authorization and check validation net goes into operation.

The service will initially include Transaction III terminals supplied by Pacific Northwest Telephone Co. along with the necessary lines and a Bell 3A ESS switch.

TNS will handle inquiries initiated by retail subscribers and messages will be sent to the Honeywell Information Systems mainframe at the Seattle First DP center, according to William Larson, the bank's vice-president.

In a typical operation, a credit authorization inquiry would be initiated at a Transaction III terminal when the salesperson passes a customer's credit card through the terminal's magnetic stripe reader. The key pad on the terminal would then be used to enter the amount of the transaction.

In addition, another key pad available to the customer would be used by the shopper to enter a Personal Identification Number (PIN). Approval or disapproval of the transaction will be displayed on the 8-digit LED read out of the terminal.

'Very Aware' of Privacy

A transaction cannot be entered into the system unless both a card number and PIN number are entered, Larson said.

He stressed that the service will be "very aware" of the customer's privacy and only information pertaining directly to the store transaction will be available at the retailer's terminal. There is no way that the retailer would be able to get a customer's current bank balance, he said.

Transaction III terminals will be polled by the Bell switch and messages will be transmitted from the Bell terminals at 1,200 bit/sec. Non-Bell terminals will probably be added to the network as the need arises, Larson said.

Seattle First wants to expand the system to make it available to other banks and charge plans. The system is not designed to serve only the bank's customers, he said.

Although the first service will start in the greater Seattle area, it will be a statewide network and other commercial banks are actively being sought to participate. It has not yet been determined how several banks will share the costs of TNS, but the goal is that a retailer will be able to access multiple credit data bases and DP centers from only one terminal, Larson said.

Facilities Available

A major advantage for the bank is that Bell will provide terminals, lines and switching at a tariffed price. If the bank configured its own network, several million dollars would be involved and several vendors would be included, he said. And there is very little start-up time since Bell has the necessary facilities already available, he added.

Transmissions between the switch and the bank's front-end processor will be either 4,800 or 9,600 bit/sec. Message format will be similar to the IBM 2780 using a binary synchronous line contention mode, a Bell spokesman said.

At present the network will be used only for transactions from terminals in retail stores, but other options exist. Since the service is part of the phone network, it is possible for customers to access retail stores from home Touch-Tone phones, Larson said.

In 1973 a subsidiary of First Seattle offered a service that provided shopping and bill paying to telephone subscribers. The service was dropped after six months.

Larson did not give a figure on how much the bank will pay for TNS. But the experimental tariff filed by Pacific Northwest Telephone includes $35/mo per Transaction III terminal and $22.50/mo for each access line.

In addition Bell will be providing a four-wire facility with either 208 or 209 data sets between the TNS switch in Seattle and the Honeywell CPU at the bank's DP center. A typical transaction will cost about one cent with exact price based on characters transmitted.

Each Transaction III will be connected to a Data Station Selector over a two-wire facility. Connection between the selectors and the switch will be over four-wire circuits, the Bell spokesman said.

The 3A switch is now being installed at a central office in Seattle and the first test transactions will begin soon, the spokesman said.

Short-Haul Line Adapters Reduce Data Costs

By LeVern Whitt
Special to Computerworld

SPRINGFIELD, Ill. – A communications technical control center, of this state's Department of General Services here, provides teleprocessing service for terminals in nearly all state agencies by utilizing short-haul line adapters.

One of the tasks of the Division of Telecommunications is providing data communications for the more than 300 terminals connected to the center. These include IBM 3270 CRTs, remote job entry terminals and 360/20 workstations.

By early 1974, data communications costs had risen markedly with the increase in terminal utilization, and the state was determined to find a less expensive way to connect local users to the system.

It seemed intuitively wrong to be using conventional long-haul modems to connect the many users within five miles of the center, but there also seemed to be no solution. We'd seen "line drivers" but they required end-to-end DC continuity – a characteristic we could not reliably obtain over Bell-type private-line facilities.

The search led to limited distance data sets, or line adapters, from Gandalf, Inc. of Wheeling, Ill.

These units offered synchronous operation at 9.6K bit/sec up to 5.5 mi. (further at slower speeds) and did not require DC continuity. These short haul units had standard EIA interfaces and "looked like" conventional modems to both the user and the computer.

This equipment seemed to fill the needs.

Point-to-Point Applications

In May 1974, the first Gandalf LDS 209's were received and put to work on point-to-point applications at 9.6K bit/sec at distances up to 5 mi. The evaluation was watched with great interest and much criticism was offered – "it's too small, too light, it can't be reliable."

At one point, Gandalf seriously considered putting the adapters in larger, heavier cabinets just to quell the critics.

"The critics were only partly right – it is small and light. At the Ill. DP center we now have in one rack what used to require five racks to hold. And with this shelf-mounted configuration with one data set per plug-in printed circuit card,

(Continued on Page 32)

IBM 3777 Helps Drake Cakes Save

WAYNE, N.J. – Drake Bakeries has become the first user of the IBM 3777 remote batch terminal and, in the process, it has acquired increased capabilities at less cost.

The 3777 provides the main link between the firm's facility here and the corporate DP center of Borden, Inc. in Columbus, Ohio.

Drake, a Borden subsidiary, uses a 370/158 in Columbus for all its administrative and other DP needs, according to Joseph Gambino, DP manager for Drake.

The 3777 will operate at 9,600 bit/sec over AT&T private lines. The high-print speed provides an output capability that is comparable to having a 1403 CPU printer, Gambino said. The 3777 will operate in both local mode for data input and binary synchronous mode for transmissions to the Model 158.

Drake also has an IBM 3776 which has many of the capabilities of the 3777, but with slower print speeds. Together both terminals replace an IBM 3780 terminal which costs about $1,600/mo. The newer terminals cost "several hundred dollars less" per month with faster operation, Gambino said.

Data is stored on a diskette in the 3777 and transmissions are sent several times per day using Bell 209 data sets. The Model 158 operates under OS/VS and uses a communications access method called Rtam, which Gambino said was an inhouse modified version of IBM's Vtam.

Eventually the 3776 and 3777 will transmit data using IBM Synchronous Data Link Control to communicate with the 370 CPU. The terminals eliminate the need for card input on the 3780.

Short-Haul Line Adapters Minimize Illinois Technical Center's Data Costs

(Continued from Page 31)

we can isolate and replace a faulty unit in only a few minutes where it used to take hours using common carrier modem equipment," Mike Johnson, data systems engineering manager, said.

By the end of 1974, studies, tests and tariff discussions with Ill. Bell and Western Union were completed and a minor modification was made to the transmitters to ensure compliance with energy requirements of AT&T Pub. 43401 for metallic wire circuits. The center now uses over 140 of the limited distance data sets.

Satisfied with Performance

Johnson is satisfied with both performance and reliability. "We've found the equipment very serviceable and have experienced a minimum of down time. Perhaps the best testimonial is the fact that the state agency, which was our severest critic, is now a satisfied user," he said.

"We're also operating several circuits at 19.2K bit/sec using the 300 series equipment and still others at 50 kbit/sec with 250 series, both types from Gandalf," he added.

Well-Adapted Hardware

The hardware is well adapted to multipoint systems and several are operating at 7.2K and 9.6K bit/sec. The ability to bridge numerous drops using digital, rather than analog, techniques has allowed terminal counts as high as 20 devices per data set.

The switching capability, inherent in the design, lets the state reconfigure networks quickly or disable defective drops without affecting other users and without common carrier intervention.

Nobody's complaining about the economics either. As an alternative to conventional modems, Gandalf's equipment is saving the state more than $250,000/year in communications modem costs alone. The line adapters cost about $50/mo compared to an average of $190/mo for a Bell modem.

Experience indicates that not all installations may proceed as smoothly as ours. Prospective users should note that the use of this type of equipment may require closer than usual liaison with the local telephone company to obtain the required unloaded metallic circuits.

Carriers in some areas may not yet be familiar with this hardware or the tariff structure. Physical obstacles may also prevent an otherwise ideal application although the following case is probably exceptional.

Short-Haul Units Desirable

In this instance, it was clearly desirable to use short-haul equipment between two buildings only one-quarter mile apart in Chicago. But the concrete jungle of expressways between these urban buildings made it economically unfeasible to install the necessary metallic circuits (and the short-haul hardware won't work over the already-in-place common carrier circuits).

It was an unusual case, but it underlines the necessity of careful planning.

Universities have seen large growth in the application of limited distance equipment. With their high use of teleprinter terminals and relative ease of installation of private cables on campus, they have been able to take full advantage of the economy offered by this technology.

Some carriers will provide metallic circuits, but the state uses conventional type 3002 facilities.

What we're really waiting for, of course, is the same kind of development effort to bring us the equivalent cost, size and weight benefits in long-haul hardware.

LeVern Whitt is manager of the Division of Telecommunications of the Ill. Department of General Services.

Hand-Held Monitor Debuts

OGDENSBURG, N.Y. – A hand-held instrument designed to monitor data communications systems to RS232C specifications has been introduced by Goodwood Data Systems here.

The Goodwood 232 monitor provides a method of checking system operation and enables problems to be identified and located when breakdowns occur.

The Model 232 indicates the condition of the data communications system under test, permits direct access to individual signal lines and allows operation of the system terminal in the echo mode.

The unit continuously displays DRT, CD, DSR, CTS, RTS, RD, TD and TEST INDICATOR on eight LEDs. Pin connections are available for oscilloscope monitoring.

Operation may be from the line, batteries or rechargeable batteries. The Model 232 costs $180 from Goodwood Data Systems, Box 768, Ogdensburg, N.Y. 13669.

Furniture Co. Cuts Order Entry Time Via Terminals

MEMPHIS, Tenn. – A furniture manufacturer headquartered here developed a computerized system of order entry utilizing communications terminals to reduce order entry time.

Memphis Furniture Manufacturing Co. produces two lines of furniture: wooden bedroom furniture, or case goods, and upholstered furniture.

One of Memphis Furniture's major customers is a very large retail chain. Hand written orders from this customer's outlets used to require about ten-days time in the mail and in office processing. Upon their receipt, the orders had to be rewritten, encoded and keypunched.

This procedure has been completely changed and enhanced by the computer program, which incorporates telecommunications, according to a spokesman.

Orders are now written by furniture department heads at the chain's retail outlets, encoded along with others on a Teletype Corp. Model 33/4210 terminal and transmitted at 120 char./sec to a central switching computer system in Chicago, he said.

Memphis Furniture uses a Mitron Systems Corp. MDRS-9 terminal to poll the communications computer and collect its orders. The incoming traffic is processed on Memphis Furniture's Burroughs Corp. B2700 computer.

Time Saved

Justification for the communications terminal, according to the spokesman, includes a savings of keypunch operator time at Memphis and at another company facility. Order entry time from customer to factory was reduced from ten days to one, he said.

The computer program developed by Memphis Furniture checks the orders, verifies customer and product numbers, assigns prices and extrapolates raw material requirements. Exception messages are created for imperfect orders, he added.

An order list is made for sales supervision. The sales department compares this listing with one made of the unprocessed incoming order traffic, which the terminal prepares by transmitting to a locally coupled Teletype printer.

Portable Tester Debugs Programs

PARAMUS, N.J. – A portable computer terminal that provides a method of testing communication systems and debugging programs has been developed by Computer Transceiver Systems, Inc. here.

Designated the Execuport Model 380, Troubleshooter, the unit functions as a standard portable terminal and has an operator switchable character set that allows the printing of normal nonprint characters such as device control codes, vertical and horizontal tabs, etc., according to a spokesman.

Standard models operate on Ascii code, but models can be supplied for use with APL, Baudot or IBM Correspondence code, he said.

Terminal Transactions

The Troubleshooter receives and prints a continuous data stream at speeds up to 30 char./sec, he noted.

Operations normally performed upon receipt of a nonprint character such as 'carriage return' or 'line feed' are not executed. Instead a special symbol is printed to provide a graphic record of the data stream.

Unconditional Printing

Printing takes place unconditionally from column 1 to column 80, he stated. After column 80 has been printed, an automatic line feed carriage return sequence is executed. Internal buffering prevents the loss of any data because of carriage return.

Program debugging often requires a memory dump to diagnose programs containing various non-printing characters, he said. The Execuport 380 provides a debugging method and hard copy printout that can be reviewed at any time.

Its portability allows it to be used in any remote location with telephone service, the spokesman noted.

Compatibility

The Execuport 380 is compatible with paper-tape and magnetic-tape memory units, most other peripheral equipment and all major minicomputers, he said.

It can be interfaced with peripherals by means of RS-232 connections at the rear of the unit.

The unit includes built-in acoustic coupler compatible with AT&T 103 series data sets, a data access connector or the RS-232 interface connector.

The 380 costs $3,070 with 30 day delivery, he added from Computer Transceiver Systems, Inc., E. 66 Midland Ave., Paramus, N.J. 07652.

Allows Concurrent Communications

Datapoint Announces Enhanced Intelligent Terminal

SAN ANTONIO, Texas – Datapoint Corp. has introduced both an upward extension to its intelligent terminal product line and a complimentary software package allowing concurrent communications with intelligent data entry.

The Datapoint 1150 intelligent terminal is said to offer increased memory, enhanced system diagnostics and memory test facilities over previous members of its product line.

In addition, the 1150 enables users to implement a real-time dispersed DP system through the utilization of Datapoint's Multilink software capabilities, the company said.

The 1150 system contains a processor, keyboard, CRT display and from two to four diskette drives, it said, adding the terminal system can be used with any of Datapoint's printers, communications adapters or tape drives.

It features a 41-key alphanumeric keyboard with an 11-key numeric pad, plus five system control keys. The 1150's CRT screen is a 7-in. by 3-1/2-in. viewing area allowing 960, 5 by 7 dot matrix characters displayed in an 80-character by 12-line format, according to a company spokeswoman.

User memory space includes 24K bytes with an additional 4K bytes of system read-only memory (ROM). The primary function of the ROM, Datapoint said, is to automatically load the disk operating system from the diskette.

The ROM also contains a debugging facility, system test, memory test and a diskette alignment and verification facility to maintain the hardware integrity of the system, it added.

The 1150 processor features Datapoint's 5500 instruction set with memory address indexing and basing capabilities; segmented and protected memory; double precision arithmetic; 16 registers, multiple byte I/O transfers; state saving and restoring; and privileged instructions, the company said.

An 1150 with two diskette drives sells for $14,480 and leases for $399/mo on a three-year lease, including maintenance, in most metropolitan areas, a spokesman said.

With four diskette drives, capable of storing about 1M bytes of data, the 1150 costs $15,680, he said.

Datapoint's Multilink communications software is said to allow the Model 1150 terminals along a multidrop line to perform local processing tasks such as data entry and report generation.

Software-programmed, switch-selectable transmission speeds from 1,200 bit/sec to 9,600 bit/sec can be obtained with the Multilink software, although higher transmission rates can be achieved using a programmable modem from Datapoint, according to the spokesman.

Multilink currently supports IBM 3770 batch/inquiry terminal emulation. Future releases will include Burroughs Corp., Honeywell Information Systems and Univac Corp. line handlers, the company said.

Multilink on an 1150 system allows concurrent communications or printing with intelligent data entry by allowing two Databus programs to run concurrently. The Datapoint master program typically is used for intelligent data entry while the utility program is used for communications or print spooling.

In a network controlled by a host computer, a Multilink system can access both its own local data base and the host computer's data base, Datapoint said.

The Multilink software package, documentation and the disk operating system costs about $100, the spokeswoman said. The communications adapter needed to effect real-time communications costs $1,500 and includes the interface and asynchronous modem, she added.

Other Datapoint languages will also run on the 1150 terminal system and are similarly priced, the spokeswoman said from 9725 Datapoint Drive, San Antonio, Texas 78284.

Graphics Display System Does Automatic Block Transfers

IRVINE, Calif. – Genisco Computers has brought out a user-programmable graphics display system which reportedly forms automatic block transfers via direct memory access.

The company's basic GCT-3000 system offers a 256-word MOS random-access memory (RAM) for graphics refresh with an access time of 50 nsec, a company spokesman noted.

A 2K-byte program store contained in the GCT-3011 programmable graphic processor is said to provide 47 mnemonic instructions for graphics manipulation.

Range of Resolutions

In addition, the typical GCT-3000 system includes a range of resolutions from 256- by 256 bits to 1,024- by 1,204 bits, with a bit-map-type refresh expandable from 1- to 16 bits per picture element, the company said.

It also includes a video control module that generates synchronization signals for the graphics monitors and, in the refresh mode, accesses data from the refresh planes for display, it added.

Interface modules are available for a variety of CPUs, although the standard system is intended for interface to a Data General Corp. Nova-type computer, according to the spokesman. The interface is a 15-bit parallel interface for direct memory access to the CPU, he added.

Array of Options

Options for the GCT-3000 graphics display system include a full Ascii keyboard, with 16 alphanumeric function keys and RS-232 interface, additional memory; video lookup table; intelligent cursor; multiple monitors; and zoom and scroll functions, the company said.

The basic GCT-3000 system costs $9,500 and the optional Ascii keyboard costs $1,500, although system prices for a "typical configuration" range up to $50,000, the spokesman noted.

Genisco Computers can be reached at 17805-D Sky Park Circle Drive, Irvine, Calif. 92714.

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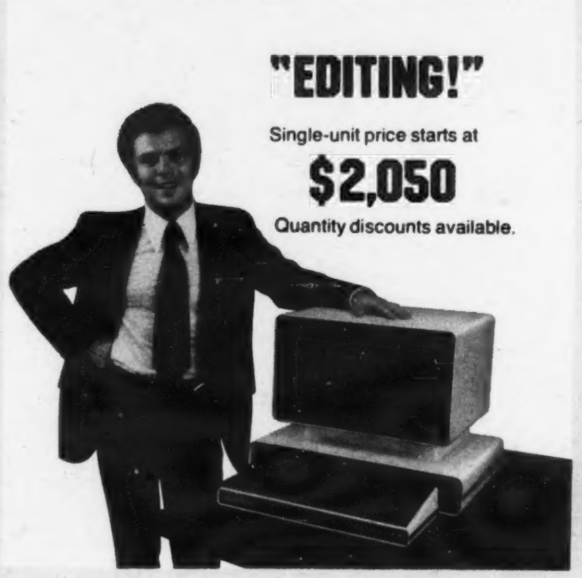

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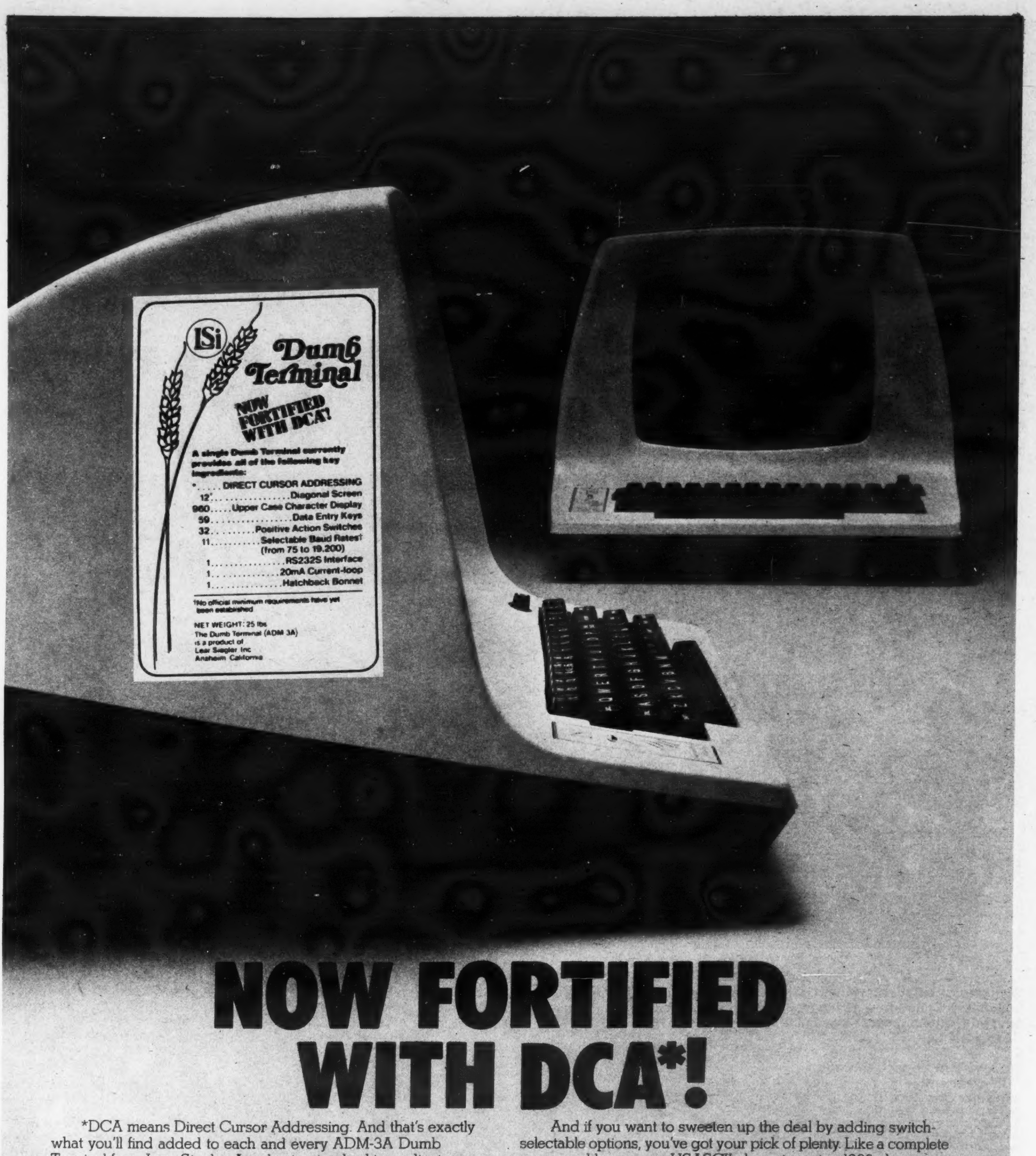

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†No official minimum requirements have yet been established

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Two Banks Speed Lock Box Operations With Terminals

NEW YORK – A terminal/data transmission system is helping Manufacturers Hanover Trust and Chemical Bank to optimize lock box operations.

They are two of a number of banks that are presently employing electronic means for handling customers' lock box operations.

Chemical Bank provides lock box services to some active 800 customers and handles a volume of about two million items. The bank's accounts range from relatively few payments of six-figure amounts to thousands of payments of less than $50. Payments processed for just 15 customers provide about 45% of the total volume the bank handles.

Contents of each payment are first checked to determine whether or not the checks are properly made out, dated and signed and agree in amounts with enclosed stubs, notices or correspondence. The checks are then put through a machine that endorses them and makes photocopies for transmittal with accompanying documents to customers and through a magnetic ink character recognition (Micr) machine for imprinting. The original checks are then tallied and deposited to the customers' accounts.

An operator at the Chemical Bank notifies a customer that taped data for its lock box daily logging will be transmitted.

To expedite daily updating of accounts receivable records, Chemical transfers payment data to magnetic tapes at three of its Mohawk Data Sciences (MDS) terminals. Tapes are then delivered to its three or four local customers, while most of the captured data is transmitted via long-line telephone, usually by appointment, after normal business hours.

As part of its services for some customers, the bank receives taped data transmissions from several other lock box locations and combines all such input into a single tape summarizing all the day's payment transactions. The pooled data is then transmitted via an MDS terminal to the customers' main computers.

According to John Olson, of Chemical's financial systems department, Electronic Funds Transfer (EFT), of which lock box operations are but a small part, is just starting to come of age. National Data Corporation, which clears transfers from checking account directly to checking account, has at present as many as 200 member banks, he noted.

At Manufacturers Hanover, an MDS 2400 data system has recently been installed for 24-hour data input work, mainly for lock box work, but with the capability to be extended to other data transmittal demands.

The Mohawk system at the bank utilizes both a 7-track and a 9-track tape drive and is compatible with the bank's main computer.

"This enables us to increase our services to our customers," Prestipino said. "For one thing, the equipment allows us to communicate directly with our customers' computers."

According to Assistant Vice President Nicholas Siragusa, manager of the bank's data entry department, there are currently 1,500 lock box transactions totaling $7.5 million transmitted daily to lock box customers.

Deposit Concentration operates for bank customers with large numbers of branches and provides an efficient method of concentrating funds from local bank accounts into one concentration account.

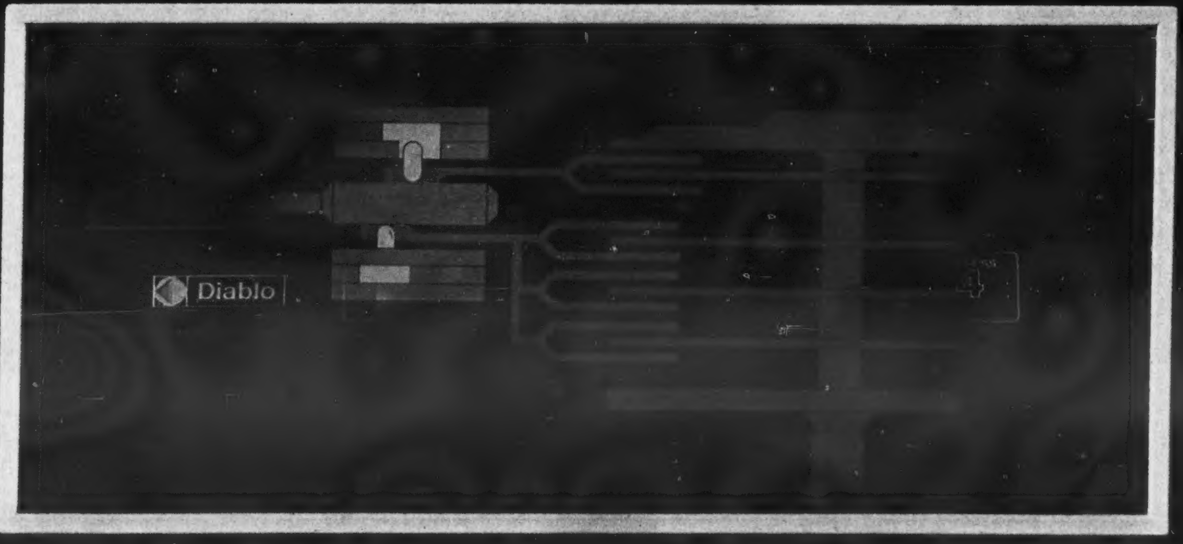
As outlined by Saul Jones, officer-in-charge of customer service for lock box and deposit concentration, daily deposits are made in local banks and then reported to service bureaus that in turn transmit the deposit information via a Mohawk terminal.

A master file is kept at Manufacturers Hanover Trust for each client so that Manufacturers Hanover in New York, can, upon receipt of deposit information, produce a check for each local deposit and control reports showing all deposits as well as the net deposit total for each client. The checks are deposited to the customer's concentration account. A daily transaction customer information tape is transmitted back to the customer's central office.

At present, the deposit concentration system at Manufacturers Hanover is serving 40 customers, handling 700 checks daily for a daily total of $51 million.

Apart from the speed of taped data transmission and the convenience of using common telephone lines of WATS service, magnetic tape provides substantial savings on data processing

(Continued on Page 40)



Uses Microprocessor Logic

Logabax Terminal Offers 'Universal' Communications

LOS ANGELES – A programmable interactive terminal that offers a 180 char./sec print speed and a "universal" communications capability has been introduced by Logabax S.A.

Designated the LX1010, the terminal utilizes microprocessor logic that reportedly allows it to talk in any existing protocol, code or mode.

It can be used as a private line polled device, emulating a 2740 Model II; it can be used as an Ascii-compatible time-sharing device; it can be used as a 2741, with or without APL; or it can emulate an IBM 3776 terminal operating under IBM's Synchronous Data Link Control, a spokesman said.

The LX1010 will be available for 30- to 60-day deliveries beginning this fall. It will lease for approximately $200/mo, including maintenance, or it can be purchased for about $6,000.

The LX1010 reportedly can emulate any protocol, using standard off-the-shelf program modules.

Users can employ Ascii, BCD, correspondence or other character sets and transmit data either synchronously or asynchronously at rates ranging from 75- to 4,800 bit/sec, in full duplex, half duplex or echoplex modes, the spokesman said.

Among the features of the LX1010 are:

- A microprocessor for program and data support.
- A standard print speed of 180 char./sec with an optional speed of 140 char./sec.
- A nine-needle matrix print head, which permits users to underscore information for emphasis, to use extended print spacing for reports printing or to use slanted or italicized printing for emphasis.
- Switch-selectable variation of the number of lines per inch – either six or eight line/in., to maintain compatibility with other systems.
- A programmable keyboard that permits layout of the standard 53 alphabetical and numeric/symbolic keys anywhere.
- A standard 10-key cluster that allows a choice of data entry formats and provides a relative and an actual print position indicator as well as either a manual or programmable tabulation feature.
- A standard set of 12 prerecorded message keys for use with specific functions to eliminate repetitive typing.

Logabax S.A. is at 10889 Wilshire Boulevard, Los Angeles, Calif. 90024.

GTE Lenkurt Has DDS Interface

SAN CARLOS, Calif. – GTE Lenkurt, Inc. has a digital data system local loop unit designed to provide the interface between terminal equipment and AT&T's Dataphone Digital Service (DDS) network.

The 1500A service unit is said to replace the customary data modem at the subscriber site and process a signal for entry into the DDS hierarchy at the local loop level.

DDS loop signals are converted to data and control signals which, depending on the data rate, conform to EIA or CCITT specifications.

Four L500A arrangements are available to match the existing 2,400-, 4,800- and 9,600 bit/sec and 56 kbit/sec DDS line speeds in accordance with industry standards, a spokesman noted.

The device provides equalization to compensate for varying loop lengths and cable gauges; network protection; and built-in test facilities to differentiate between DDS and terminal failures, he added.

GTE Lenkurt can be reached at Department C720, 1105 County Road, San Carlos, Calif. 94070.

Two Banks Expedite Lock Box Operations

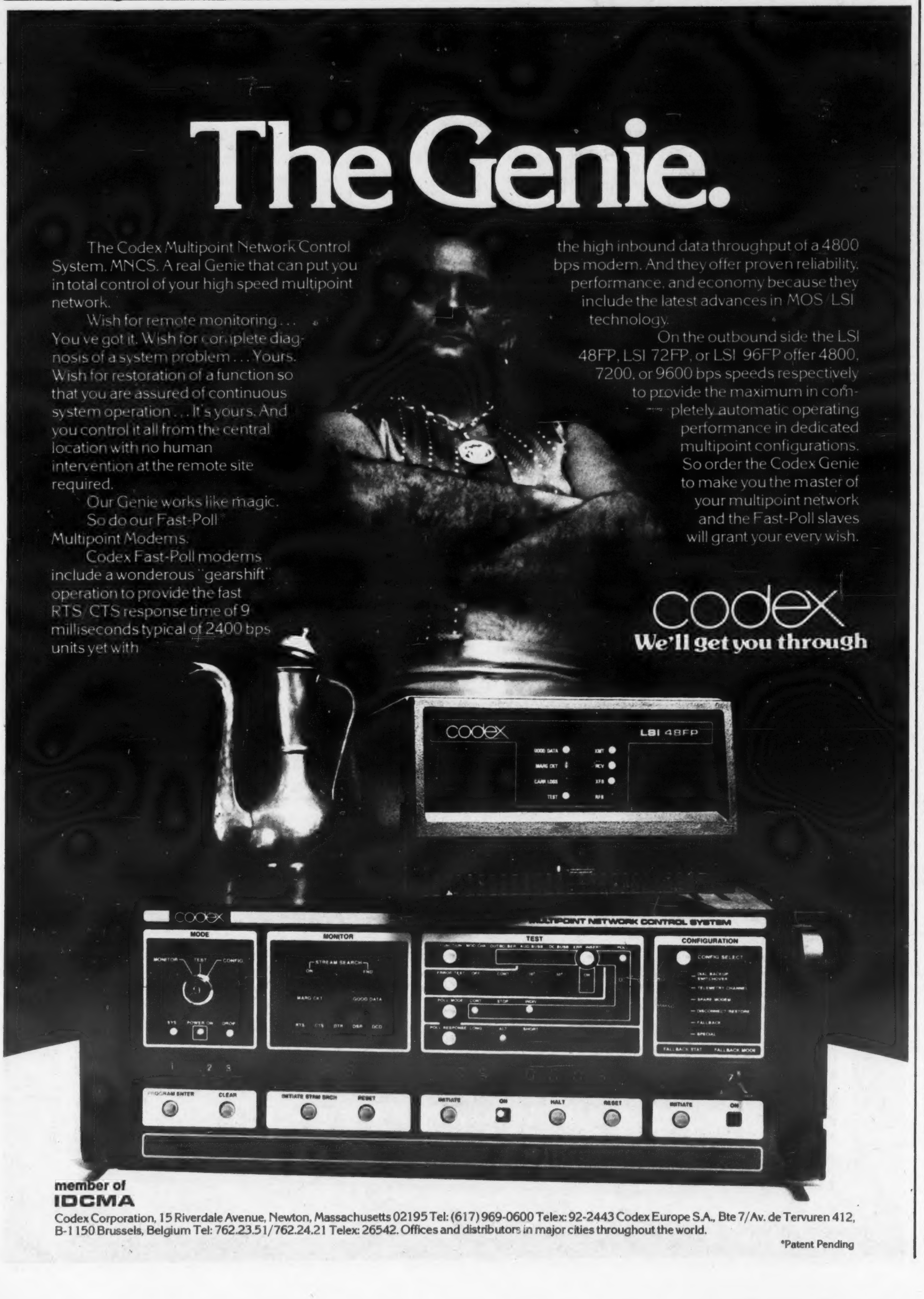
(Continued from Page 39)

costs.

Because electronically captured data can be applied to the computer in its original form, key punch operations and verification of punch cards can be eliminated.

In many cases, data input is further simplified by the use of return stubs, or other specially prepared documents that can be optically or magnetically scanned, in place of keying the data manually.

Equipment and operating costs for receiving transmission of data from lock box collection centers are quite low compared to alternate systems of handling and offer customers immediate use of detailed deposit information.



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CW Survey Shows

Amdahl Users Unconcerned About Future IBM Moves

By Toni Wiseman
Of the CW Staff

Amdahl users seem totally unperturbed by speculation that IBM might incorporate more software into its hardware or develop a future operating system incompatible with Amdahl's.

Users believe such a move on IBM's part would hurt its own 360/370 users as much as it would Amdahl's, a recent survey of Amdahl users has shown.

Public Domain

The Amdahl 470V/6 operates primarily with software developed and placed in the public domain by IBM. Amdahl obtains, modifies, distributes and maintains four IBM operating systems, according to an Amdahl prospectus filed with the Securities Exchange Commission recently [CW, Aug. 30].

The firm plans to continue this policy as long as such programs are placed in the public domain or made available at reasonable fees, it said.

As for applications programming, users obtain, for a fee, applications software for the 470V/6 in the form of proprietary packages developed by IBM and others. This software is presently restricted to licensees.

Amdahl also expects its customers to be able to continue to obtain and use these applications programs and has no plans to develop such programs, the company said.

If IBM attempts to restrict the use of its future operating systems, however, Amdahl may have to develop more of its own operating system software.

Bob Mays, director of computer services and operations at the Southwestern Ohio Regional Computer Center (Sworcc), said he really wasn't concerned about the possibility of incompatibility, at least not now.

Should the situation arise, "we'd have to make a decision about staying with Amdahl or changing vendors for the next acquisition," he said. While he had heard IBM planned to build more software into its hardware, he did not feel this was imminent.

H. Russell, DP manager at MIT's Draper Laboratory, doesn't feel that the situation is apt to arise at all.

"I don't see how they could do it without hurting their own users. After all, if it's incompatible with Amdahl, it's also incompatible with 370/168 users," he stated.

"Even if they do introduce a new operating system, I can still get my work done unless they introduce some new peripheral I dearly want," he said, adding that was unlikely too.

Completely Independent

Dr. Robert Bartels, director of the computer center at the University of Michigan, isn't worried about a new IBM operating system because "we've been completely independent of the IBM operating system for more than 10 years. It doesn't frighten us a bit."

Michigan's operating system is its own Michigan Terminal System (MTS) which it converted, "without difficulty," from its old IBM 370/168 to the Amdahl 470V/6.

"We could conceivably face a problem five to six years hence, when and if we outgrow this machine, but we're confident Amdahl will not sit passively around and will act to counter any IBM move," he said.

National CSS, Inc. (NCSS) also has its own internally developed operating system, VP/CSS, so Michael J. Field, vice-president of data systems, does not expect any immediate problems from IBM changes.

"Further, I don't really see how, with a new series, IBM could essentially cut off its own operating system investment in the 370, or the 360 for that matter," he said.

Incompatibility

Field did not feel that the possibility of peripheral incompatibility would affect his shop too much "because if it were of sufficient interest to us we would develop the software to support it ourselves.

"If there were some particular hardware feature which we were not given specifications on, that would be a problem," Field admitted, "if programs to use that feature were only accessible through firmware, for instance."

The whole question will depend on how far IBM goes in burying its new features and how far it can afford to go in terms of locking out its current software investment, he said.

Amdahl has not discussed these possibilities with NCSS, Field said, but he surmised Amdahl sees a big enough market in the 370 replacement market.

"In fact, IBM might see some kind of backlash in coming out with a computer series which essentially turns its back on its current 370 market. Amdahl might pick up some there," he said.

Innovations Needed

Field added that "unless Amdahl comes out with some innovations, some new capabilities on its 470 series, in the next couple of years, its image will be such that it will not appear competitive on the marketplace, even though it may still make a good market in 370 replacements."

Dr. Dick Simmons, director of Texas A&M's computer center, was also among the optimistic Amdahl users.

"We understand Amdahl plans to stay compatible with IBM," he stated.

"In other words, if IBM came out with a new razzle dazzle system of some type, they would probably try to counter it in some way," he added. Future peripheral interface problems "are not a concern to us," Simmons noted.

"With the number of 168s in and the number being delivered, I would say the life of the [370] system, in my opinion, is going to last through the life of our Amdahl.

"In other words, we'll be able to hook enough peripherals to our Amdahl because you'll be able to hook them to a 168."

Simmons thinks IBM will probably, at a future date, "suck" part of the operating system into the hardware and control units into an internal part, "but I feel that any product follow-on that IBM has, like a 380 system, will put us in the same position as a 168 user – a position I don't mind being in.

"I just don't anticipate them doing anything where the 168 user will be able to take advantage of it and the Amdahl user will not," he concluded.

IBM 3800 Eases User's Report Burden

MILWAUKEE, Wis. – The F.W. Woolworth Co. has installed a high-speed printer to prepare reports that, if laid end-to-end, would stretch nearly 200 miles.

The IBM 3800 printing subsystem helps prepare a variety of reports for the 97-year old firm which operates nearly 1,800 Woolworth and Woolco Department Stores in the U.S. Woolworth is the first customer to install the system.

The non-impact printer combines laser and electrophotographic technologies and operates at speeds up to 13,360 lines/min. It accommodates a variety of character sizes and styles on any of 50 different sizes of continuous forms. The 3800 can also produce text and forms designs on plain paper.

The Central Accounting Office (CAO) performs the general accounting functions for all Woolworth and Woolco stores in the 50 states, the District of Columbia, Puerto Rico and the Virgin Islands. The office keeps detailed records of merchandise expenditures, sales and income on a store-by-store and region-by-region basis.

Using its two IBM 370/158s, the CAO processes vast volumes of material each month. This includes more than one million invoices from vendors and thousands of Woolworth and Woolco credit card statements which involve millions of sales transactions.

"High-speed printing is essential if key reports are to reach store managers on time," Patrick J. Nelis, division manager of DP, said. "This system helps us minimize the time required to print reports and prepare them for distribution."

Because the 3800 uses only single-part paper, the need to separate multi-parts forms and dispose of carbon-paper waste is eliminated. Every copy of a report is an original, meaning that each recipient gets a clear, readable document, he said. The 3800 is a non-impact printer, so Woolworth needs no impact printer supplies such as carbon paper and ribbons to operate it, he added.

The system helps conserve paper by printing smaller character sizes, so the company uses less paper to produce the same amount of text. Reports are now printed on smaller forms than before in a move toward standardization. This method requires about 40% less paper.

The laser is a key feature of the IBM 3800. The low-power laser "prints" character images on photoconductive surfaces covering a rotating drum. As the drum turns, dry, ink-like powder that adheres only to these images is applied to the photoconductor and transferred to paper to produce printed text.

The 3800 allows Woolworth the flexibility of creating its own forms, he said. Complex form designs on film negatives can be projected on the printing drum by a strobe light. Less complicated format designs, such as straight, intersecting or right-angle lines, can be formed by the laser. Both features help reduce costs by allowing use of less expensive plain paper and by minimizing the need to keep pre-printed forms in stock, he added.

Users of Voice Response Units Vocal in Praising the Systems

DELRAN, N.J. – Although small in number, users of voice response systems are generally "very well" satisfied with their equipment and with the technique in general, according to a recent report from Datapro Research Corp. here.

Datapro's voice response survey attracted replies from only 27 users – a fraction of the number normally received when the firm surveys users of other types of DP equipment.

But these 27 users were collectively handling over 132,000 calls per day from more than 20,000 terminals.

The average number of calls handled per day was 5,259 per system and 351 per line. The average number of voice response terminals served was 1103 per system and 74 per line.

Of the 27 respondents, 21 said the average length of a call on their systems was less than 1 minute, and 24 said the average response time to a request was in the range of 1 to 5 seconds.

The users were asked to assign ratings of excellent, good, fair or poor to each of nine specific aspects of their voice response systems. In the most revealing of these nine categories, overall satisfaction, 66% of the users assigned a rating of excellent, 30% good and 4% fair.

Among the 11 responding users of IBM voice response equipment, 10 rated their overall satisfaction as excellent and 1 called it good. Among 7 users of Periphonics equipment, overall satisfaction drew 4 excellent, 2 good, and 1 fair rating.

Five users of Wavetek equipment registered 3 excellent and 2 good ratings, and 4 users of voice response systems from other vendors accounted for 1 excellent and 3 good ratings in overall satisfaction.

Although the voice response users' overall level of satisfaction was high, the users were considerably more critical of their equipment vendors' performance in the areas of software, technical support and equipment maintenance, Datapro said.

CDC Tape Units Can Save 21%

MINNEAPOLIS – Users of IBM 3420 models 4, 6 and 8 tape drives can save up to 21% with compatible drives announced recently by Control Data Corp. (CDC), the firm claimed.

The series of 6250 bit/in. systems from CDC are 21% below the IBM purchase price and 5% lower than the IBM price on a three year rental, CDC said.

The CDC 38032 systems include seven- and nine-track transports with recording densities of 556, 800, 1600 and 6250 bits/in. at tape speeds of 100, 150 or 200 in./sec, CDC added.

A CDC 38032 controller handles from one to eight 34202-4, -6 and -8 transports intermixed in any combination.

Optional features allow the connection of two, three or four controllers with combinations of up to eight or sixteen intermixed drives and a two-channel switch option is offered for installations with multiple IBM 360 or 370 computers.

Purchase and lease prices for the CDC 38032 controller are $34,100 or $682/mo on a three-year contract.

A 34202-4 transport can be purchased for $17,400 or leased for $363/mo. Purchase prices for model 6 and 8 transports are $20,500 and $23,950, respectively, and these units lease for $436/mo and $483/mo. Deliveries are scheduled for the first quarter of 1977, the firm said from Box 0, Minneapolis, Minn. 55440.


WBNC


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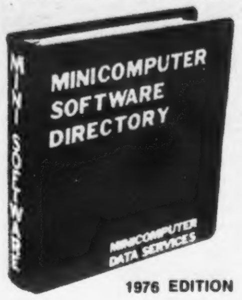


System Joins the Pick and Shovel Gang To Help Classify Archeologists' Finds

EVANSTON, Ill. – Computer technology has joined the pick, shovel and drill to help Northwestern University archeologists at the largest excavation site in North America.

Archeologists working at the Koster site in southern Illinois rely on a Control Data Corp. (CDC) 6400 computer 300 miles away at Northwestern University here to keep track of their findings and even determine where to begin the next excavation.

In addition to information unearthed at the Koster site, pertinent data recovered from some 800 different archeological sites in the 2,800 square mile research area is entered through a terminal at the project's headquarters in Kampsville, Ill., for relay to the CDC computer.

At Northwestern's Vogelback Computing Center, the 6400 uses a university-developed data base program known as Remote Information Query System (RIQS) that is designed to handle the varied data of individual researchers.

RIQS not only catalogs the archeological data, but monitors the quality of it to safeguard against duplication, performs required analyses and provides printer or plotter output.

Benjamin Mittman, director of Northwestern's computing center, said the half-million items of information generated annually at the excavation sites would have considerably less value without a computerized storage and retrieval system.

From information entered on terminals at the excavation headquarters, the CDC computer built a file for each of the 800 sites.

Each file is structured to hold 145 items of information about the site and the excavation results. Site description includes name, location and size of the excavation, names of the archeologists involved, where the artifacts from the site are stored, and what has been photographed.

The survey information sent to the computer relates to soil conditions, evidence of cobbles and limestone (indicates cooking, pottery and tool making) and of animal bone (means there is favorable preservation at the site). Of the 145 slots of information storage for each site, 123 are for listing the artifacts uncovered – the data most important to archeological analyses.

To retrieve information from the file, either by site or classes of information, a user enters the assigned catalog number.

For example, suppose a student is interested in studying Early Archaic projectile points. He enters the catalog number assigned to that class of information and is presented a list of the sites where that particular projectile was uncovered.

Then, by entering the names of those sites, he can learn more about the projectiles, where they are stored and the archeologists involved in their excavation. What's more, Mittman said, researchers can utilize the system without being sophisticated programmers.

Colleges Handle DP Work By Mini/Mainframe Link

BOSTON – The Massachusetts State College System broke with traditional academic data processing techniques when it decided to send the instructional, research and administrative data of its 10 colleges to one central processor.

In operation since January 1975, the computer network of 11 Control Data Corp. (CDC) System 17 systems linked to a large-scale CDC Cyber 72 installed here has compiled an average uptime of 98% while processing a mix of 30,000 jobs monthly.

Each of the 10 campuses located throughout the state is equipped with a CDC System 17 computer. Another System 17 operates at the network center to control data traffic and for program development.

Originally the network was implemented in October 1973 with CDC 731 remote batch units at the campus sites. All but one have been replaced by the System 17s which offer some on-site processing through 32K to 64K memory and memory cycle times of 900 nsec and 600 nsec.

Leo Roomets, director of computing, said the decision to integrate administrative and instruction computing under one central processor came after research by a special committee and an outside consulting firm. The resulting plan, a five-volume, 2,000-page document included state-of-the-art concepts in systems design, teleprocessing and network organization.

From the beginning, plans included providing the colleges with the administrative and technical support necessary to meet all their data processing needs.

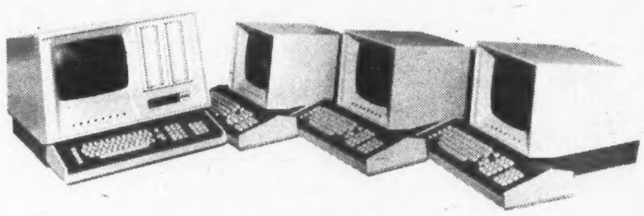
The network center supports a system and programming staff charged with the responsibility of maintaining and enhancing an integrated information system designed around linked data base structures for use in an on-line, real-time transaction-oriented environment.

For example, this allows students to apply at any three of the 10 colleges with the information stored on the Cyber 72. Admissions officials query visual display terminals in their offices for such information, determine if the applicant is to be accepted by that college, then instructs the system to generate the appropriate letter to the student. From this initial information, a student file is created for input of future data.

Other than handling traditional college administrative tasks such as budgets, student records, billing, grade reporting and payroll, the Cyber 72 also processes data from special administrative programs, such as the disposition of the Commonwealth's annual $11 million scholarship fund.

While administrative data processing for the 10 colleges naturally creates a considerable workload, instructional DP is also on the network.

During a typical month, 22,000 or 71% of the jobs processed are of an instructional nature. User statistics show that about 3,000 students and faculty use the computer network regularly.



'Friendly' System Wakes Teachers Up in Indianapolis

INDIANAPOLIS, Ind. – A computer system is both friend and foe to teachers here.

The system at the Indianapolis Public Schools is so nice that it wishes "Happy Birthday" at the right time to each of the city's 8,173 school employees. On the other hand, it will also be responsible everyday for making 6 a.m. wakeup calls to scores of teachers who had been planning to sleep in.

Actually, those two jobs represent only about .5% of the 400-plus programs running on a Honeywell Model 66/10 computer system at school headquarters here, according to Jim Bethel, director of DP.

The routine applications include computer-assisted instruction, grade reporting, class scheduling, test scoring and racial-balance analysis. In addition, the computer handles a number of business programs, such as payroll, accounting, purchasing and salary projections.

Happy Birthday

But when an employee's birthday falls within the current pay period, the system is programmed to type a message on his check which says: "Happy Birthday. Check Your Driver's License."

The same application prompts the printing of other messages on bi-weekly checks of those not celebrating birthdays. The messages generally have an educational flavor – "Children have more need of models than of critics" and "Only the educated are free" are typical examples.

But a system is also under development for selecting substitute teachers. It is an automated procedure for identifying and evaluating substitute teachers on a daily basis.

"What the computer does is beyond the capabilities of the human mind," Bethel said. "Why, it took us four months alone to develop the algorithm to run this application and 15 months all told to put all the pieces of the system together. When we select a substitute teacher for a day, we don't want just a babysitter. Our goal is to find the best qualified individual for each assignment. The wrong teacher means a lost day for our students, and we're trying to eliminate lost days."

150 Marked Absent

Among 4,391 teachers in the school system, an average of nearly 150 per day may be out due to illness, personal business or for professional development purposes, Bethel stated.

The current system for selecting subs is all manual; a staff of three persons searches through hundreds of card files to find candidates for the missing regulars. The choices they make may depend on how much they can remember as they sort the files, what else is on their minds and maybe even how many cups of coffee they've had for breakfast.

What the computer application does is to make sure that a prescribed list of factors and priorities is taken into consideration before selections are made. There are a number of variables – the days and hours during which each substitute is available, what schools they prefer, their special capabilities, how school principals feel about them and a fair share of opportunities for all subs.

The computer also is programmed to select the same substitute each day in the event of the prolonged absence of a regular teacher; however, after 14 days, it selects a new sub so that the school system is not obliged to pay retroactive double or triple rates to teachers with 15 consecutive days of service.

The process of finding the right substitute once the new application is ready will start early. Before dawn, absent teachers will be asked to call school headquarters. There, a voice-activated tape recorder will receive key information – the teacher's name, social security number, school, grade and reason for absence.

At 5:30 a.m., clerks will be on the scene to transfer data from the tape recorder to the computer. By 6 a.m. the system will begin making selections of substitutes. Two absence reports at a time will be displayed on the terminal screen, including the name and phone number of a recommended sub. Clerks will then place phone calls.

If a substitute is unavailable or unwilling to teach that day, the clerk enters a special code on the computer terminal to get information about another possibility.

"This system will be a rarity-maybe even unique-in the educational field," Bethel claimed. "Others have used computers to provide the information from which a substitute can be selected, but this system will actually make the selection."

Indianapolis Public Schools purchased its Honeywell Model 66/10 computer for $950,000 in mid-1975 and began immediately to develop the substitute teacher selection system. The computer system has 128K words of memory and 350 M char. of disk storage. Peripherals include a front-end processor, card reader and printer.

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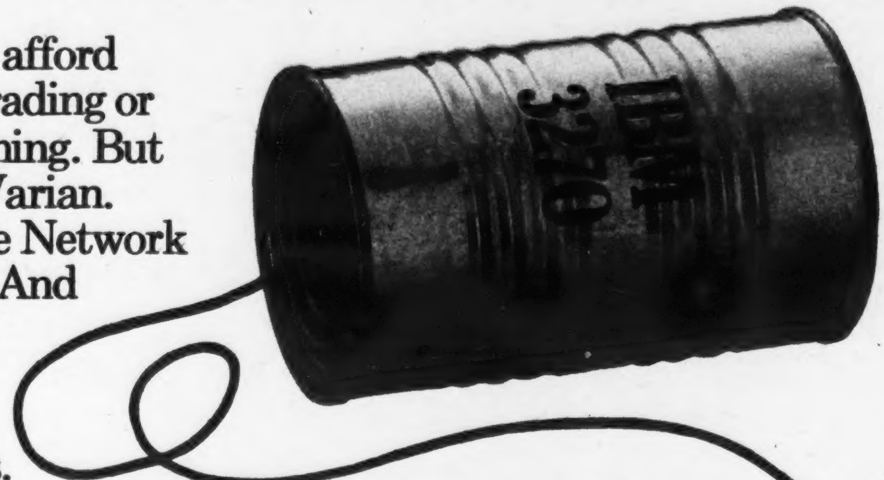

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On the 'Hot Dog Highway'

Oscar Mayer Chooses Central DP to Keep 'Em Moving

MADISON, Wis. – A total of 36,000 wieners an hour roll out of each of the famed "hot dog highways" at Oscar Mayer & Co. here – and a centralized computer system helps the firm keep track of them.

The firm has nine slaughtering and manufacturing plants now situated around the U.S. from Chicago to Los Angeles, from Pennsylvania to Texas. A network of 41 distribution centers has been set up to serve major metropolitan markets, and 750 sales representatives regularly call on almost every supermarket chain and independent food store in the country.

Size, growth and a decentralized operating structure pose some tough control problems for Oscar Mayer management, because in their industry livestock supply, product demand, manufacturing costs and selling prices can fluctuate daily.

Therefore, effective control is critical and to help, Oscar Mayer recently implemented a centralized computer systems approach.

The aim, according to William F. Shaffer Jr., group vice-president-finance, is to strengthen company-wide management control while retaining the advantages of local operating autonomy and local market responsiveness.

"Informed management is basic to effective control," Shaffer said. "This demands a central, readily-accessible source of current and pertinent company-wide information. This is what we are creating through centralization of computer processing here at corporate headquarters. We are fashioning a computer support system that we feel is far more compatible with today's operating and management requirements."

The first step in Oscar Mayer's centralization program was the installation (in August 1974) of an IBM 370/158, which began taking over numerous DP chores that had been handled by smaller computers at the individual plant locations. As the need for the self-contained plant computer systems was eliminated, they were replaced by remote job entry (RJE) terminals.

By early last year, the equipment conversion was completed, at a considerable savings to the company in reduced computer hardware costs, he said.

"In effect, the less expensive RJE terminals give the plants even greater data processing capability than they had before, because of the direct access RJEs provide to a much larger computer," Shaffer noted.

"More important to us, however, is the improved communication between remote plant and corporate headquarters, and the invaluable information flow that is now established," he added.

"As it processes data sent in via the plant terminals, the central computer pulls off fresh, pertinent information and feeds it to data base files where it is readily available for operational control and planning, and management decision purposes," he noted.

"In short, the new approach allows us to put in raw data and get back meaningful information – information for decisions on what livestock and materials to buy and when, what products to make and where, what inventories to carry, what costs to watch, and what prices to set," Shaffer said.

In the area of cost control the firm is using the computerized Manufactured Product Standard Cost System. The basic element of this system is a computer-maintained record, comparable to a bill-of-material (BOM) record, for every one of the 300-plus products that Oscar Mayer makes and sells.

Included in the BOM-like records are the standard costs for every element involved in producing the product: labor, materials, supplies and overhead. And, because of the unavoidable differences in equipment, facilities and methods between the individual plants, there is a BOM for each product for each plant.

In other words, the corporate system has information on the cost standards by product, plant and element. Working with these data, the system is used to develop a composite least-cost standard which becomes a benchmark for comparing plant cost standards and a weighted company cost standard which becomes the basis for pricing decisions and for billing products to the distribution centers.

"The standard cost and variance analysis systems are invaluable to production management," John R. Paul, general operations manager, stated.

"We can quickly spot the under-and-over variations against plant and company-wide standards, and then just as quickly zero in on the responsible operations and departments."

A major segment of the company's standard cost system deals with labor cost, Paul added. Oscar Mayer utilizes work measurement controls which result in bonus payments to a large proportion of bargaining unit employees. The central computer performs the calculations in measuring actual performance against standards which eventually tie into the labor cost variance portion of the company's product standard cost program.

"The computer's contribution to operations goes well beyond cost control, however," Paul declared. "For example, the computerized hog evaluation program gives us the ability to cut up hog carcasses in such a fashion as to favor one particular cut over another on the basis of current market value of one product compared to another. This helps us to maximize production yield from a profit standpoint. And, the information the computer furnishes helps us to optimize production scheduling in line with individual plant capacity and overall inventory and demand situations."

The information that feeds the production scheduling system derives from another centralized computer processing routine – tonnage forecasting. Based upon sales history and demand forecasts (continually updated), the 370/158 system is used to create a tonnage forecast for each of some 50 major product lines.

The tonnage forecast is established on a product line basis.

Opening Doors to Information

Bottle Washer Maker Breaks Barriers With Data Base

ST. LOUIS – "We feel that our new system will open the doors to information. Traditionally, there's been a barrier between data in the computer and actually getting it into the hands of the people who can make use of it. We intend to remove that barrier."

The speaker is Robert H. Chapman, president of Barry-Wehmiller Co. here, the largest manufacturer of pasteurizers for the brewing industry in the world.

The firm is using a Univac 90/30 computer system along with Information Management System/90 (IMS/90), an interactive, transaction-oriented file management system.

The IMS/90 system allows files to be inquired into and modified on-line. Displayed data may be limited to the specific information the user needs and is said to eliminate the requirement for many long paper reports.

By using passwords, access to files under IMS/90 can be limited for security purposes.

Barry-Wehmiller (B-W) was founded in 1897 as the Barry-Wehmiller Machinery Co. producing machinery for a variety of industries.

Around the turn of the 20th century the company designed and erected the first continuous basket pasteurizer. As the market in this product grew, the company concentrated on manufacturing equipment for the brewing industry.

Today, in addition to its pasteurizer business, B-W is the largest U.S. manufacturer of bottle washers. An inventory valued at approximately $8 million is carried by the company.

B-W's principal products – pasteurizers and bottle washers – are sizeable pieces of equipment. They take about nine months to make and cost approximately $500,000 per unit. A typical pasteurizer weighs 150 tons, is 60 to 115 feet in length, 19 feet wide and eight feet high. A bottle washer weighs 135 tons, is 50 to 70 feet in length, 16 feet wide and 15 feet high.

IBM to Univac Switch

Tracing the company's history of data processing, Chapman said that prior to installation of the 90/30 system, the company had used an IBM 360/20 computer, acquired in 1968.

"However, we realized we were only getting accounting information from that machine. What we really need is better management information and greater control of our manufacturing operations.

"We're confident that IMS/90 will provide the information we're looking for. This will enable any of our managers to have immediate access to the information stored in the data base, whenever they need it. It will also eliminate a considerable amount of paperwork," Chapman said.

The company particularly needs to get more instant information on production costs, he added, noting it will use the Unis/90 Industrial Control System from Univac for this purpose.

The 90/30 system now installed at B-W has a main memory of 164K bytes and extended mass storage provided by integral disk drives totalling 57.9M bytes. The peripherals include an integrated card reader, card punch and printer. A CRT display unit is part of the 90/30 console. The system also includes three Univac keypunch units. Seven Uniscope 200 visual display terminals sited in various departments are linked to the 90/30.

Aubrey Roehrs, director of management information systems for Barry-Wehmiller, said the conversion from IBM to Univac was a relatively painless operation taking about four weeks.

"We made preparations for the conversion well before the computer was delivered and performed the entire job in-house," he said.

"We set a target date to implement the 90/30 and to close out operations on the IBM 360/20 and were able to accomplish the task on time. All of our files were converted by punching cards during off-hours in our computer center," he added.

The batch applications converted to the 90/30 include accounts payable, general ledger, stock status, payroll, and various reports including labor summaries.

Since it became operational, Roehrs said, the 90/30 system has boosted overall data processing efficiency and provided the capacity to expand the system.

"Our operators have found the OS/3 Operating System easy-to-use and also relatively simple to train others to use," he added.

Planning Group

To chart a plan for implementing Barry-Wehmiller's long-range management information system, a planning staff was formed composed of representatives from manufacturing, marketing, engineering, accounting, finance and data processing.

This team is responsible for detailed planning as well as implementation planning of all data processing systems. The group meets monthly to review programs and make additional plans. A formal report on progress is made quarterly to the company's executive staff.

Following IMS/90, the next phase will involve placing the Unis/90 industrial system in operation.

Unis/90 is a system for manufacturing planning with aids for plan implementation and monitoring, he said. It spans the development and projection of a master schedule based on customer orders and forecasts through material and capacity requirements, planning procurement, production and shipment of products.

"We realize," Roehrs said, "that Unis/90 will take considerable time for us to install in its full dimensions. Under our planning schedule taking us up to early 1979, we will be implementing the various modules of the program in stages.

"The basic part of the Unis/90 data base will be the Bill of Materials (BOM) files. We have already begun work on organizing the BOM data base structure for manufacturing. In this system the bill of material is computer accessible," he said.

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In 'Westworld' Sequel

Computers Join Act in Tinsel Town Special Effects

LOS ANGELES – From the company that brought you Yul Brynner's "eyes," now comes Peter Fonda's head – all because of computer-based image processing techniques.

A couple of years ago Information International, Inc., here created special effects for the film "Westworld" that simulated the way in which robot-gunslinger Brynner perceived people and objects as a screen comprised of 3,600 tiny squares, each with a uniform color.

Now, for the film's sequel, American International Pictures' "Futureworld," currently going into general release, the company has taken such computer graphics special effects a leap forward.

In "Futureworld," visitors to a futuristic resort are replaced by clones, precise duplicates of themselves. Information International, employing techniques used for illustrating complex scientific phenomena in 3-D color movies, created the special effects for a 40-second sequence in which Fonda's clone is constructed.

Fonda was photographed by three cameras set at precise 45-degree angles as he rotated on an index table. Large blowups of the film strips were made, and placed three at a time on a data tablet with two cursors.

An operator then "sculpted" Fonda's features into a computer memory to create the basic topological data. This encoded data consisted of the coordinates of some 4,000 planar polygons of the actor's hair and face.

This data then was inserted into a Grafix I manufactured by Information International. The system is designed to electronically read printed information and convert it to digital form for computer processing; it can then rearrange and update the stored information for republication.

In this instance, it was employed to convert the 3-D data on Fonda's features into the "look" of his head from a particular viewpoint, on film.

In the sequence, details of a formless head gradually are filled in until the head clearly is Fonda's. This illusion was achieved by devising short segments of film, each with more data added.

"We are implementing recent computer techniques to create natural-appearing pictures of 3-D objects in environments," according to John Whitney, Jr., of the firm's motion picture projects, who worked on the earlier robot's-eye effects and the new illusions.

"In many ways, these digital computer processes look to simulate the laws of nature in the real world of physics," he said.

"For every frame of film we expose, we calculate values for perspective; object color and surface characteristics; position, angle and center of view; lighting position, color and strength; depth cuing, and many other variables."

By using viewpoint program parameters, they were able to simulate camera movement, for instance. In part of the sequence, the camera "pans" past the partially completed cranial cavity and across the face as it is being formed.

For another sequence, Information International employed a variation of image processing techniques used in the Mercury and Mars spacecraft missions and in simulating Brynner's perspective in "Westworld." In this 20-second sequence, three samurai materialize in a chamber as part of a character's fantasy.

The set was photographed devoid of actors, and a separate film sequence was shot of the actors on the same set. Data from the latter film was used to form small triangular patches of color. These patches vary in size and location, and are regenerated from frame to frame against the unchanging chamber background, steadily becoming smaller and increasing in number until they coalesce as three men.

Although not on a silver platter, this computer-recreated head of actor Peter Fonda embodies one of the special effects in "Futureworld."

The techniques have potential applications beyond movies, such as simulating structures for medical films, research, architecture, educational films and advertising, Whitney said.

Tri-Star Printers Reduce Paper Costs

MOORESTOWN, N.J. – Tri-Star Computer Systems, Inc. has announced a series of line printer subsystems featuring interchangeable print bands that are said to reduce paper costs and simplify forms requirements.

The subsystems, built around the Control Data Corp. (CDC) 300, 600 and 900 line/min printer family, are available with CDC and Data Products interfaces.

The subsystems utilize lightweight stainless steel print bands. Variable width forms printing ability offers 132 column printing on standard 8-1/2 in. by 11 in. paper.

The 300 line/min model is $6,700 from the firm at 304 Harper Drive, Moorestown, N.J. 08057.

Seafood Importer Combines Service Bureau, Small System To Cope With Peak Operations

By Esther Surden
Of the CW Staff

SAN DIEGO – A judicious combination of a small business computer and an IBM 360 for peak loads at a service bureau is saving a frozen seafood importer here from having to invest in a large mainframe, according to a user.

"When the product is purchased from suppliers, principally in Mexico, we have to maintain for inventory each shipment received from that supplier," Frank Barrancotto, controller for Ocean Garden Products, Inc., explained.

"As we sell off his inventory and complete the transaction, he receives an advance. As the product is actually sold, we have to pay the remaining value. This gets rather complicated because it involves not only inventory accounting, but also some financial accounting.

"Banking is involved in it to a degree. On the average, we might handle or process 2,000 or 3,000 shipments each year, each one of which may have ten to 30 line items in detail," he said.

"This is way outside the realm of the small business system," so the company uses the service bureau for this, Barrancotto said.

General ledger is also taken care of by the service bureau, he noted, because it uses much of the same data.

The small business system is currently a Basic Four Corp. 600. The company is in the process of combining the applications run on its own Basic Four 400 with those of its subsidiary, Crest Importing Co. Inc., which also had a Basic Four 400, and converting to the 600.

It probably would have cost "close to twice what we are paying now for hardware alone," to use in-house systems alone, Barrancotto said.

"We looked around and saw Burroughs Corp. systems and IBM for a full in-house system," but discounted them, Barrancotto said.

Principally, the company is running a "traffic system" on its small computer. This is an order entry, invoicing, inventory control on-line system. Inventory is contained on an on-line mode, so as soon as a product is shipped the inventory is updated, he noted.

Business Scattered Over Country

"The business is scattered all over the country. The product is stored in public warehouses, so that we have inventory all over the place." It is not unusual for inventory to be stored in twenty or thirty places at one time," he said.

Accounts receivable, accounting functions, cash receipts, vouchers and special subsidiary financing are maintained on the Basic Four system. "We maintain a subsidiary ledger on all of our banking activity so we know when to pay off notes, etc." Barrancotto said.

"We have a very normal month-end

(Continued on Page 58)

Rest in Peace

ENTERPRISE, Ala. – *Progress Can Be Painful* was the notation on an IBM card shaped cake at the wake following the internment of Enterprise State Junior College's (ESJC) IBM cards in a mock funeral July 26.

ESJC has recently installed a cardless IBM 3 "to enable us to teach the system now used by most businesses," Bill Brown, director of computer services, said.

The mock-funeral idea originated with a computer science class in which the instructor told the students that in the not too distant future the IBM card will be a thing of the past.

"You will have to go to a museum to see one," he told the class, "and even there they will be buried under more modern data entry systems."

Mourners gathered for the sad occasion heard a eulogy delivered by a self-ordained minister and listened to "Precious Memories" sung by one of the students.

Linked to Host CPU

First Phase up in Standard Oil Distributed Net

SAN FRANCISCO – The first phase of a distributed network, encompassing 18 systems linked to a central minicomputer which, in turn, is linked to a mainframe, has been completed at Standard Oil Company of California.

The distributed net is designed to make the order processing easier for Standard's service stations and direct buying customers, allowing next-day shipment from the company's inventory, the user said.

"We are adopting the network to provide better service to our customers and our own operating personnel," according to R.K. Crossan, the firm's assistant director of computer service.

Hewlett-Packard systems have been installed to serve two of the company's Southern Calif. distribution points: the Los Angeles tire battery and accessory (TBA) warehouse and the El Segundo package petroleum warehouse.

The planned 18 systems will be controlled by an HP21MX network central minicomputer, which in turn will transmit confirmed orders and inventory data to an IBM 370/168. Both the 21MX and the 370 central computers will be located at the firm's customer service center in Concord, Calif., Crossan said.

The network is replacing a combination of stand-alone computers, intelligent terminals and manually-operated systems, he noted.

Systems development, proprietary programming and implementation are a joint effort of the company and its systems contractor, Management Systems Technology (MST) of Chicago.

"Many station operators have commented favorably on the service," R.J. Macaluso, project task leader responsible for the system design and implementation, said.

"In addition, if an item is back-ordered, they appreciate being informed during their original phone order exactly when they can expect the back-ordered item," he noted.

A Chevron dealer, for example, can place one phone order through the Los Angeles TBA warehouse for any one of 1,200 TBA items stocked there (and also for packaged petroleum products sold at service stations).

The order, filled from inventory, can be delivered within 24 hours, according to W.G. Larson, the company's marketing division manager who was responsible for the warehouse during the implementation process.

Order entry personnel, through HP video terminals, make available to phone

(Continued on Page 53)

Shugart Adds Minifloppy Drive

SUNNYVALE, Calif. – The Shugart Associates SA 400 minifloppy is a floppy disk drive in a package the size of a cassette tape unit, the firm said.

Designed for use with minicomputers and microprocessors, the unit has a 125K bit/sec transfer rate and can store 109.4K bytes of data unformatted and 89.6 K bytes formatted, the company noted.

The drive employs a proprietary glass bonded ferrite/ceramic read/write recording head technology, the same as is available on the firm's SA 800 drive. Write protect circuitry is a standard feature, according to the firm.

The controller for the unit can handle up to three of the minifloppies. Using the IBM 3740 format with modified gap structure and a 128-byte buffer, the controller operates with an 8-bit byte bi-directional parallel I/O channel. It also features direct track/sector addressing, Shugart noted.

The media for the minifloppy will be available from Shugart and other media manufacturers, a spokesman noted.

The minifloppy costs $390; ten diskettes cost $45. The controller costs $490 with delivery in 90 days from Shugart Associates, 435 Indio Way, Sunnyvale, Calif. 94086.

For Loan Commitment Work

Mini Speeds Up Forms Process

CLEARWATER, Fla. – A minicomputer dedicated to on-line loan commitment work has automated the complicated forms process at First Federal Savings and Loan of Clearwater here.

The system "does everything from typing a commitment letter to preparing 38 different loan documents," Jack P. Davis, systems specialist said. Daily, weekly and monthly reports are also generated providing management with cash flow projections, statistical data and loan closing schedules, he noted.

The configuration at First Federal includes a Burroughs B-721 and 64K of memory, a dual-drive disk cartridge subsystem, an 85 line/min printer, a CRT and cassette station. It cost about $70,000, he noted.

Prior to implementing the dedicated mini the firm had been preparing the forms manually. When it realized the need to automate its operation, the association looked at Wang Laboratories, Inc. and Nixdorf forms preparation machines as well as a Burroughs Corp. minicomputer.

Burroughs Chosen

The minicomputer was chosen because Burroughs agreed to work with the association to develop a program to fit their loan preparation needs and because many more loans could be processed on the mini than on alternative systems, Davis said.

"The other forms preparations systems use cassette tapes which are quite bulky and very slow. With this system we are able to have the loans all random access, whereas with a cassette system it could take five or 10 minutes to get to any one loan depending on where it was located on the cassette or what cassette it was located on," Davis said.

Currently the system can handle 800 individual loan files at one time in various stages of completion.

Once the minicomputer completes all the forms, the information needed by the association's data center, Sunshine State Systems, Inc., is transmitted via telephone data line to the CPU, he noted.

The data included in the transmission includes all journal entries, general ledger transactions and all file maintenance necessary to establish a new mortgage loan.

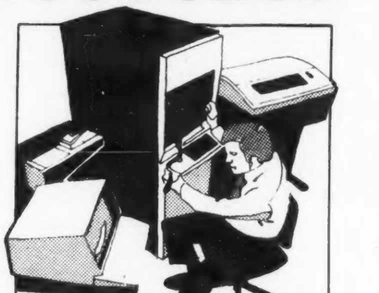
The loan program, written by Burroughs and defined by the association, is about "95% operational," he added.

The association has about 70,000 account holders, 190 employees and nine branches as well as a main office. "We have visions of within the next year tying all our branches into the minicomputer and letting them have access to the loan system," Davis said.

The project was spearheaded by Thomas A. Meyer, vice-president of Administrative Systems.

"Our association needed to automate the processing of mortgage forms. A loan that takes a typist 3 to 4 hours to type now takes the computer only 10 to 15 minutes," he said.

"Unlike other forms preparation systems which utilize cassette tapes, our system can be updated and changed at will and the data, once entered, is used for all phases of processing.



First Time User Needs Selection Specialist

By Kevin Stumpf
Special to Computerworld

In Canada a breed of computer consultant exists called the "First Time User Specialist." Here a Canadian reader explains this strange breed.

The "First Time User Specialist" is a specialist who will provide assistance in the selection and installation of a computer system in a company that has no experience with computers.

You might say, why should I spend more money, especially at professional rates? The already large amount of time, money and effort invested into the computer project justifies this.

You can now say that all computer endeavors have the same requirements, whether it's your first or fifth computer.

That's true, but after your first successful computer installation you know what to expect and how to handle the project while the first time user does not have that experience and must rely on someone for assistance.

Usually they rely on their vendors, but salesmen are salesmen and programmers are programmers.

The specialist will make inquiries regarding the user's application, perform feasibility studies, inform the user what to look for in a computer company for selection purposes and basically create a bidding document for the selection of a computer.

Based on qualitative and comparative analyses, the specialist will also do a preliminary selection of all companies that can handle the application, a sort of first-round-cut, and prepare these for presentation to the user.

The user simply attends scheduled demonstrations and makes a final selection. As a consultant, the specialist will make suggestions but no decisions. This service allows the user to operate his company without interruption.

During the next phase of the project, programming is very critical and its success depends upon knowledge of both the computer system selected and the user's requirements.

In some cases it is advantageous to have the specialist's firm perform the actual programming because of their attained knowledge of a user's requirements.

In other cases, where the system is small and simple, a user could have a software firm supply the programs.

It is not only beneficial to obtain the services of the specialists because of their knowledge of systems but also because of a situation which is occurring in the computer market.

There is an increase in the number of computer companies on the market and with the advent of franchised computer sales, the quality of computer sales forces and maintenance services has decreased.

The first time user specialist is aware of all new equipment and companies on the market and it is his job to suggest only the best computers for the user to review.

Stumpf is proprietor of Computing Elements Development in Waterloo, Ontario.

Mini Bits

Datum Tape Controller Fits Harris Systems

ANAHEIM, Calif. – A tape controller/formatter from Datum Inc. interfaces seven- or 9-track, IBM compatible tape transports to Harris Corp. Slash 4, Slash 5 and Slash 7 minicomputers, the firm said.

The Model 519H provides multi-transport operation for up to four parallel drives with speeds from 12.5 in./sec to 200 in./sec. It is directly compatible with the Harris system's timing functions and generates proper formats and control signals for NRZ encoded tapes at 800 bit/in., 556 bit/in. and 200 bit/in. or phase-encoded tapes at 1,600 bit/in., the firm claimed.

Prices for the controller/formatter range from $4,100 to $9,710 depending upon tape format and cabling required from Datum Inc., Peripheral Products Division, 1363 South State College Blvd., Anaheim, Calif. 92806.

Wordplex Systems Added

WESTLAKE VILLAGE, Calif. – Ventek Computer Systems has announced the Wordplex/1 and Wordplex/7 word-processing systems based on the firm's own 64K processor, according to a spokesman.

The Wordplex/1 is a standalone system while the Wordplex/7 features multiple workstations. The Wordplex/1 can communicate to other systems in the field or to a mainframe computer, the firm noted.

A 12-station Wordplex/7 costs about $150,000 while a standalone Wordplex/1 costs $16,000, the company said from 31829 W. La Tienda Drive, Westlake Village, Calif. 91361.

Data Recorder Enhanced

BALTIMORE – Columbia Data Products, Inc. has enhanced its intelligent 3M-type data cartridge recorder with an improved search mode feature, according to the firm.

The enhancement allows searching for records or files using any sequence up to 32 alphanumeric characters of actual data as an identifier, the firm said.

The Model 300B costs $1,795 for a single-track unit and $1,995 for a four-track unit. Columbia is at 6655 Amberton Drive, Baltimore, Md. 21227.

Portable MSS Improved

LANHAM, Md. – Computer Operations Inc.'s portable Linc Tape mass storage system (MSS) can now be used with Digital Equipment Corp. PDP-11 and Data General Corp. Nova minicomputers, the firm said.

The unit allows users to edit, compile, assemble and load programs in the field.

The Linc Tape can accommodate 672K byte/reel and has a transfer rate of 8,400 byte/sec, Computer Operations noted. It costs $2,295 from the company at 9700-B George Palmer Highway, Lanham, Md. 20801.

IBM Time Down 'Tremendous'

Lighting Firm Braves Independent Peripheral Jungle

GRIFFITH, Ind. – An IBM printer gone awry, combined with rising IBM 3 peripheral costs, prompted Smith-Victor Corp. here to brave the independent peripheral jungle and configure a system that it estimated will save $60,000 over the next five years.

"We had a repair man in every day for the first eleven days we used the IBM printer. Our downtime was tremendous. The printer kept pulling off the top copy of our seven-part shipping form. The only way it could handle the form was to remove the two bottom copies and even then there were still problems," Ken Janusz, controller for the company, said.

Smith-Victor sells lighting equipment for professional photographers and television stations. The initial minicomputer configuration at the firm was a leased IBM 3/10 with two 5444 disk drives and the 5203 300 line/min printer.

The firm purchased the IBM 3 after leasing it for two and a half years and building up rental credit on the system. The firm's first contact with independent peripherals came when it decided to get some add-on memory from Business Systems Technology, Inc. (BST) about two years ago. It upgraded to 8K of IBM and 16K of BST memory then.

Because of the firm's dissatisfaction with the printer's performance as well as its slower speed, the company looked around for a way to upgrade last November, Janusz said.

The firm could have chosen an IBM 1403 printer, Janusz said, but the BST 750 line/min printer it did choose was less expensive and could handle the thick shipping form, he noted.

At the same time the company changed printers it also changed from IBM disk drives that had nearly reached full capacity to BST drives.

"For about a hundred and a half more a month we went up from small drives to two big ones and doubled our print speed," he said.

"The real reason we went to BST is that they offered it all in one package: the printer, the disk drives and the core, with help in obtaining a third party lease on it," he noted.

Other independent manufacturers were considered before the firm chose BST, but "they didn't have too large an installed base," he said.

The system handles the firm's financial and inventory applications including order processing, invoicing, accounts receivable, monthly customer statements, sales analysis reports, payroll general ledger, production control, costing and finishing goods inventory.

The $60,000 savings over the next five years was estimated because "a similar IBM upgrade would have cost the company double what it is paying for the BST equipment," he noted.

Sorbus does the maintenance on the core memory and printer and Memorex does the maintenance on the drive, he added. So far there have been no finger-pointing incidents, he said.

Standard Oil Plans Net Using 18 Minis

(Continued from Page 51)

customers virtually all pertinent computerized information, according to a spokesman. An account file may be accessed by customer name, service station number or account number.

Special promotions or quantity price breaks are displayed for any group of items being ordered. Credit information and delivery instructions may also be verified during phone orders, he said.

If a packaged petroleum product is out of warehouse stock, the HP minicomputer checks to determine if the requested item is in current production. If so, it is packaged and routed directly to a shipment assembly area, circumventing the warehousing function. As items are ordered, inventory quantities are automatically adjusted, he noted.

Nightly stock replenishment analyses, empty container availability reports and petroleum replenishment schedules are also produced by the minicomputer. The petroleum replenishment schedule determines which product grades are required to be filled in various size containers for the following day.

As a byproduct of order entry and inventory data, the minicomputer produces picking lists, shipping labels, packing slips and truck loading schedules, he said.

Bin location assignments are also computer-controlled. Several bins throughout the warehouse may be allocated to a common item, such as oil filters. The system will then route the picker, selecting bins in the order of optimum picking efficiency.

Nightly manpower reports for warehouse managers forecast estimates of picking and loading manpower required for various warehouse sections on the following day. Each day several hundred orders, involving thousands of line items, are shipped from each location.

DP Workload Reduction

"Our online system will substantially reduce our DP workload," Crossan said.

Previously orders were received manually, forwarded to order-entry personnel for keypunching, then processed for shipping. Later, in a separate operation they were invoiced centrally from Concord. Now one video entry at a processing point produces all locally required shipping, warehousing, inventory, billing records and adjusts numerous management operating records, he said.

In addition, data from the same entry is transmitted to Concord for central invoicing, he noted.

Files and programs will be downloaded to the distributed sites. Thus, the company's data base will be controlled centrally, programs will be maintained uniformly without the expense of local programming staffs and processing time of the distributed minicomputers will be maximized.

Firms' Equipment Choices Eased With Modeling on Desktop Unit

By a CW Staff Writer

GREENSBORO, N.C. – With an IBM 3 in the computer room, a user here has purchased a portable computer for a specialized application.

The IBM 5100 at ARCT, Inc. was "purchased exclusively for special modeling" according to Gary Brown, an independent in-house consultant to the firm.

The company is a distributor of textile machinery, a subsidiary of a textile manufacturing firm located in France. It has a 16K IBM 3/10 with 9.8M bytes of disk, a 200 line/min printer and a card unit which it uses for inventory control and accounting type applications, Brown said.

The 3 could not handle the modeling application, he noted, because "first of all, we had a requirement for a portable machine that we could take into various customer locations and enter data and run there. Also, the type of modeling was best approached in Basic or some other problem oriented language, not RPG."

The 5100 was chosen for the job because it was a "very special project with a time deadline and the time deadline didn't provide much opportunity for shopping around." Another consideration, Brown noted, was service, for which the company was certain IBM would be a good choice.

The 5100 was installed in December. It is a 32K Basic machine.

The application developed for ARCT by Brown's firm, Datapor Inc. of North Carolina, a management consultant company, was undertaken to "help mills determine the most efficient equipment to buy and as a byproduct help design future equipment," Brown noted.

The company sells to "texturing mills," he explained, which fluff the fiber to get it ready for knitting.

Machinery makers have been manufacturing faster and faster systems, he noted, but the profit per pound of fiber has been going down, to the point at which it may have reached diminishing returns.

The 5100 takes actual data and hypothetical data, looks at it on an existing or theoretical basis and the user can change values such as labor costs and predict profitability, he added.

"Each of us has to know the specific return on investment, capital investment per pound of yarn and conversion cost per pound of yarn," Robert F. Waters, executive vice president of ARCT, Inc., said.

"We can now take customer conditions, plug them into the computer model and get the cost relationships for them. Using both hypothetical and real machinery and plant conditions, we've been able to determine in minutes on the small computer what it would take weeks to determine by hand," he said.

"The value of the variable-base model is the ability it gives us to put 'what if' factors into the conversion costs. In addition to machine prices and yarn processing rates, we've also been able to look into the performance of fibers at the higher machine speeds."

The computer model, Waters said, takes into account productive capacity, capital investment, plant labor, utilities, manufacturing supplies, depreciation, interest and plant general and administrative expenses. From this, the results show the total capital investment per pound of yarn for various machine speeds, and the total conversion cost per pound.

Waters explained his computer simulation model using a 30 million pound texturing plant with a "standard" 400 meter per minute friction twist machine processing 150 denier yarn. From that, he used the computer model to look at the higher through-put speeds of 600 and 800 meters per minute.

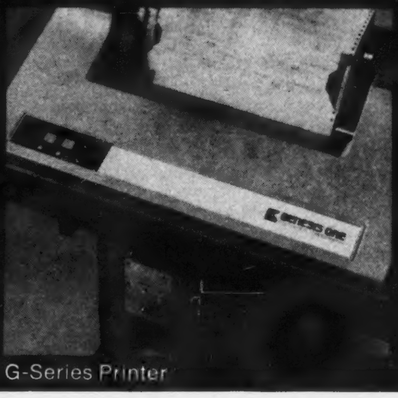
With the IBM 5100 portable computer, Waters said, he considers approximately 200 variables related to yarn production.

In the first of three computer models, the three machines (400, 600 and 800 meters per minute) for comparison are assumed to have the same space, perimeter area, labor and prices. After considering all 200 variable elements, the computer provides the base capital investment summary per pound per year and the total conversion cost summary.

A second model maintains the summary elements of the first model, but corrections are made to establish 600 and 800 meter per minute machine prices. Both machine and perimeter areas are increased, while machine and operator efficiencies, break factors and maintenance factors are retained.

(Continued on Page 56)

The portable IBM 5100 system at ARCT, Inc. is used to calculate capital investments and the costs of converting yarn for textile manufacturers.



For PDP-11/70 Minis

Ampex Has DEC - Compatible Core Memory

EL SEGUNDO, Calif. – A plug-compatible core memory for a Digital Equipment Corp. PDP-11/70 computer is available from Ampex Corp.

Billed as a "transparent alternative to or replacement for the MJII memories used in the PDP-11/70 computers," the ARM-1170 memory is available in 128K byte (32K words of 36 bits each) increments and is capable of expanding PDP-11/70 computers to their maximum 4 megabyte capacity, the firm said.

Components required to achieve expansion to the 4 megabyte maximum can be accomplished within the two PDP-11 cabinets, a spokesman noted.

Throughput enhancement is provided by the two- or four-way internal interleaving features in the ARM-1170, he said. Using four way interleaving the effective cycle time is 350 nsec as compared with 800 nsec for the basic ARM-1170. External interleaving between memory chassis is also available, he noted.

One Mbyte (256K memory words of 36 bits each) of ARM-1170 memory sells for $48,500 and takes up 22.75 in. of rack space within the PDP-11/70 cabinet, Ampex added from 200 N. Nash St., El Segundo, Calif. 90245.

Nashua Unit Replaces IBM 3 Disk

NASHUA, N.H. – Nashua Corp. has announced what it said is an improved handle design for the IBM 3 disk cartridge.

The handle "replaces the double-function handle" formerly used on the cartridge and replaces about 17 parts with three parts, a spokesman said.

Pulls Straight Up

"All that is necessary to open disk cartridges with the single function handle is to pull the handle straight up," he noted. It also protects against dust penetration by eliminating cover openings of the older handle design, the firm claimed.

Holding Device

A holding device to permit uniform pull across the entire cartridge when it is opened has also been added, Nashua said.

The cartridge costs about $85, a spokesman said from the Computer Products Division, Nashua, N.H. 03060.

Lab System Peaks

MARLBORO, Mass. – Digital Equipment Corp. (DEC) has a laboratory automation system based on its PDP-11 minicomputer that is said to acquire and analyze data simultaneously from as many as 16 different analytical instruments that produce data outputs with peaks.

The system is designed for use with gas and liquid chromatographs and with atomic absorption, ultraviolet-visible and infrared instruments.

Based on either the PDP-11T34 or its floppy disk version, the PDP-11F34, the system has 32K words of either core or semiconductor memory.

The Peak-11 software runs under the firm's RT-11 foreground/background operating system and uses multi-user Basic, DEC said. In the foreground the Peak-11 software collects the data and performs peak processing while in the background it analyzes the stored information, the company noted.

The system prices begin at $33,905, DEC said, depending on configuration. It will be available in October from the company in Marlboro, Mass. 01754.

Datum Introduces Input Subsystem

ANAHEIM, Calif. – An analog instrumentation input subsystem from Datum, Inc. allows development of custom data acquisition, control, monitoring and data logging systems, the firm said.

Designated the Series 7200, the system allows users to choose any number or type of analog inputs as well as the type of minicomputer used, Datum said.

The firm integrates the input subsystem from modular components, with a pretested assembly ready for installation in Data General Corp. Nova and Eclipse, Digital Equipment Corp. PDP-8 and PDP-11 or other minicomputers, the company noted.

Analog input is accommodated by eight-channel multiplexer cards inserted into a 16-position chassis. Sixteen chassis give a total of 2,106 channels; two channels in each chassis are used for calibration, Datum said.

The Series 7200 analog input subsystem costs $10,000 to $20,000 depending on the number of channels and options, the firm said from 1363 S. State College Blvd., Anaheim, Calif. 92806.

Mini For Modeling Helps Predict Costs

(Continued from Page 55)

In the third model, which completes the transition from the "standard" 400 meter machine to the 600 and 800 meter machines, operator and machine efficiencies are reduced, break factors are increased, and maintenance factors are also increased. All else remains the same as in the first two models.

Summary results show the conversion analysis with almost identical costs on the 400, 600 and 800 meter assumptions.

"When all three models are re-run using a heavier weight yarn supply package, the computer model shows an advantage in the heavier supply of about .9 cents per pound," Waters said. "In our hypothetical 30 million pound plant, that's an advantage of about $275,000 a year."

The costs presented by the computer models ARCT developed are based on their assumptions and not those of a user, Waters emphasized.

"But that's specifically why we developed the models," Waters said. "We wanted to be able to put customer conditions and assumptions into the model and give the customer his bottom line figures in a very short time.

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Solving the People Problems of EDP Management
Led by Jack Stone, PhD, this two-day seminar will help you improve the usefulness and productivity of your computer operations by increasing your ability to communicate with people — from keypunch operators to the board of directors. Utilizing workshops, case studies and round table discussions, major topics covered include: Challenges and pitfalls of EDP people problems; principles of industrial relations in industry; managing analysts, programmers and operators; managing DP managers and supervisors; computer center end user and top executive relations, and the training, education and development of EDP personnel.

Cost for the seminar, including continental breakfasts and luncheons and all course materials is $300 for the first registrant, and *$260* for additional registrants from the same company.

NEW YORK ... **Hilton** ... *Nov. 8-9*

Legal Tools For Computer Contracting and Protection
Led by Roy N. Freed, the internationally known lawyer, author and educator in the field of computer law, this 2½-day seminar will show you how to protect your interests when dealing with vendors that supply your installation. The seminar covers all types of contracts impacting computer use — including your own contracts. Other subject areas include negotiations, warranties, avoidance and resolution of disputes, security, fraud, taxation, and techniques for handling any transaction.
Cost for the seminar, including continental breakfasts, luncheons, and all course materials is $325 for the first registrant, and $275 for additional registrants from the same company.

NEW YORK ... **Plaza Hotel** .... *Oct. 27-29*
CHICAGO .... **Hyatt Regency O'Hare** ... *Nov. 3-5*

Performance Evaluation and Improvement
Led by Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement and improvement,* this two-day seminar will give you performance measurement techniques that are *designed* to save your installation money. As well as system performance at your own installation, topics covered include: criteria for quantifying performance, pencil and paper analysis of a system, benchmarking techniques, realtime, batch, and interactive time sharing systems.

Cost for the seminar, including continental breakfasts and luncheons and all course materials is $250.

NEW YORK ... **Hilton** ..... *Nov. 8-9*
CHICAGO .... **Marriott** ... *Nov. 15-16*

Data Communications Course #1010 — Practical Data Communications Systems & Concepts
Led by Dr. Dixon Doll, the nationally recognized tele processing consultant, this two-day seminar will familiarize you with the latest advances in data communications, with emphasis on ways to cut costs. The course covers areas like SDLC, HiD-LoD, DDS, newly approved major revisions to WATS, and the impact of satellite carriers.

Cost for the seminar, including workbook, reference materials, luncheons and continental breakfasts is $350 for the first registrant, and $300 for additional registrants from the same company.

DENVER ... **Brown Palace** .... *Oct. 18-19*
MIAMI .... **Holiday Inn Airport Lakes** ... *Nov. 15-16*

Data ommunications Course #1020 — Advanced Teleprocessing Systems & Design
Also led by Dr. Dixon Doll, this three day seminar, which is designed as a follow-up to course #1010, will show you techniques that minimize operating costs in commercial data communications networks. The course includes class study and discussion of your own systems, as well as procedures, approaches and algorithms for evaluating and cost-optimizing network operations.

Cost for the seminar, including an extensive set of customized course materials, continental breakfasts and luncheons, is $450 for the first registrant, and $400 for additional registrants from the same company.

MIAMI ... **Holiday Inn Airport Lakes** ... *Nov. 29-Dec. 1*

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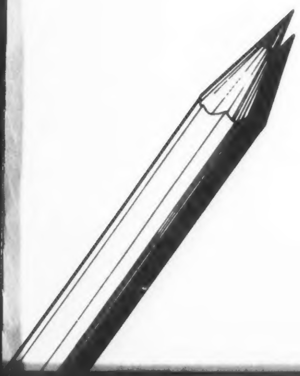

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CIRCULATION DEPARTMENT

While Classwork Continues

Systems Replace Time-Sharing and Cut School's Costs

BROOKFIELD, Conn. – Faced with rising costs and unsatisfactory service, Brookfield High School unplugged the computer time-sharing service it had been using and bought its own minicomputer system.

"We decided to buy our own computers when we realized we could do so for the same amount we would have spent on time sharing," Frank Short, the mathematics teacher in charge of the two small systems, said.

The time-sharing service, offered by a local college, had supplied the school with one Teletype terminal on-line to a Digital Equipment Corp. PDP-8 computer and another, off-line, terminal used to punch paper tape to speed up the use of the on-line terminal.

Short described that as essentially a one-user system, for which Brookfield paid approximately $3,400 per year. "We needed an additional on-line terminal, which would have brought our annual rent to nearly $6,000 per year," he said.

"Our two Wang [Laboratories, Inc.] computers together cost about $30,000 and we'll pay for them over five years. At the end of that time we'll have two computers rather than a handful of lease payment receipts," he added.

Brookfield's equipment now includes a Wang WCS 20 processor with CRT display, dual diskette drive, cassette tape drive, card reader and 100 char./sec printer. A Wang 2200S processor with a modified IBM Selectric typewriter is used for hard copy output.

Four major advantages to the Wang equipment, according to Short, are that the systems are quieter than the Teletype machines they replaced, have been more reliable and they give Brookfield High control of its own computer resources for the first time.

Finally, they allow batch processing using marked cards, taking program throughput from one per 15 to 20 minutes to a program in 30 to 90 seconds.

No Disruption

"We can use the Wang computers in the classroom without disturbing the class," Short explained. "That wasn't true of the Teletypes. Also, we can link the computer to large television monitors which enable the entire class to see a display at one time.

"We installed the Wang computers last October, and since then, we've been down a total of two hours. Even that was not the fault of the computer. Someone dropped the machine and broke the on/off switch," he said, adding "I soldered it back on, myself.

"We had a mechanical problem with one diskette unit at one point, but the Wang service man was here first thing the next morning."

Short said a major problem with the service bureau was that the bureau controlled the computer and, therefore, the data stored in the computer by Brookfield students.

"They could dump stored programs from their disk whenever they wanted and did so on some occasions without telling us," he complained.

Short described "being locked into Basic as our only software programming language and if we were going to teach Fortran, we'd want Fortran IV. None of the other machines we looked at really had a strong Fortran IV capability."

Primarily Instructional

The Wang computers are used primarily for student instruction, with emphasis on the subject matter of mathematics and social science courses rather than on computer programming techniques, he said.

The WCS 20 is also used, however, to help maintain attendance records, an application Short said had not been practical when the school used the service bureau because the college would dump, rather than maintain data files.

"Rather than keeping attendance sheets, now, we have punch cards for each student. These cards are sent to the office and run on the computer in about ten minutes. It saves us half an hour to an hour over the old method and the advantage is that first period teachers can now verify attendance. They couldn't, before."

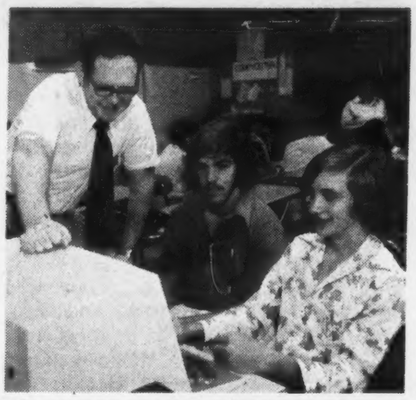
Next year, the school plans to use its computer to help maintain each student's record of absences and tardiness both for school and for state reporting purposes, he said.

Short himself uses the computer in Algebra II classes as well as in analytical geometry, trigonometry and general math.

"Take a typical problem – given three points on a coordinate plane, develop a program to determine whether or not the three points are colinear; and, if not, determine the equation, center and radius of the unique circle on which those three points lie.

"The student is forced to develop the equation, arrange it, so that the problem is solved in its proper sequence, then verify the answer, to see that the algebra is correct. The computer forces students to generalize the algebraic solution, because otherwise, each problem would take a month of Sundays to solve."

Other applications for the computer are in statistics and probability.



The system at Brookfield can be used while class is in session. Here, Frank Short instructs two students.

System Helps Standardize Psychiatric Treatments

DES PLAINES, Ill. – A minicomputer at Forest Hospital here is being used to help standardize psychiatric treatments using a goal-oriented approach in a singularly non-standard field, according to Dr. Monte J. Meldman, director of research for the hospital.

The PDP-11/40 from Digital Equipment Corp. (DEC) computes the test marks of psychiatric patients and consults narrative text files to print out test impressions, probable diagnosis, drugs that could be used in treatments and predictive statements about the patient's recovery," Meldman said.

"We have an automated goal-oriented record form for documenting and evaluating the clinical state and progress made by psychiatric patients," Meldman noted.

Running under software developed at the 150-bed hospital, the system stores a goal list, treatment plan, mental status exam, progress notes and follow-up interviews for each patient.

The Psychiactric Information Processing System (Pips), he explained, is an interactive system in which all patient information is data-based in a relational inquiry storage system. Data is captured from staff, patients and relatives of patients to develop the base.

The system is also being used to perform psychiatric tests for multiple institutions. About 800 hospitals are evaluating their tests on the system, Meldman said. The tests are scanned by an optical scan mark sense reader.

The configuration at Forest includes a PDP-11/40 with 104K words of memory, three DEC RK05 disk drives, tape transport and about ten Applied Digital Data Systems CRTs.

When the Relational Inquiry Storage System (Riss) program was ready to be run, the hospital realized it needed more storage capacity, Meldman said, and examined the options open. The hospital finally decided to buy the 800 micro controller mass storage device from Advanced Electronics Design (AED).

The installation in June of this year was not without one minor problem, Meldman noted, but he said the problem was normal because "every time you put a new piece of equipment in, it doesn't work for two weeks."

The problem was solved by an AED engineer, he noted.

"The new configuration represents a quantum leap for the hospital system," Meldman continued. "Previously spacebound with only three RK05's, we increased our storage by 20K words or the equivalent of 17 RK05s for a cost of $18,000," he said.

"The new system operates about three times as fast as the old," he noted, and "runs the hospital census system off in seven minutes, as opposed to the old system which took 18. The Minnesota Multiphasic Inventory psychological test reports are now processed in 30 seconds."

Service Problem

Service for the system is a problem, he said, but the hospital is planning to buy a set of replacement boards for the unit to help alleviate it.

DEC has been "very helpful," he noted and the only regret the hospital has is having to put an independent peripheral on the system.

"In fact, we are going to have a DEC PDP-11/34 for bookkeeping" installed, he said.

Independence Is Answer

DES PLAINES, Ill. – Forest Hospital here was faced with the need for increased disk storage, so Dr. Monte J. Meldman looked at his minicomputer vendor's offerings as well as that of an independent manufacturer.

What he saw was that the mini's standard disk was twice as expensive as the independent, too big to fit into the small computer room, and that if he went ahead and purchased the disk, he'd need to bring in three-phase current which would cost an additional $10,000 to install.

His answer? The independent's equipment. See story above.

Mini, Service Bureau Join for Cost Cuts

(Continued from Page 51)

peak. At the end of the month, we merely dump all of the transactions from the Basic Four and all of the associated master files onto the tape drive. We then send the master tape to the 360 and they do all of the heavy work," he said.

All file maintenance activities are taken care of internally, he noted.

The configuration at Ocean Garden includes the CPU; two disk drives, with twice the capacity of the disks on the 400; six terminals; two printers; one magnetic tape drive; and one paper tape punch.

A somewhat unusual use of the computer, according to Bob Murphy of Haskin and Sells, a consulting firm that is doing the systems design work for Ocean Garden, is the paper tape punch being used to drive Western Union TWX machines.

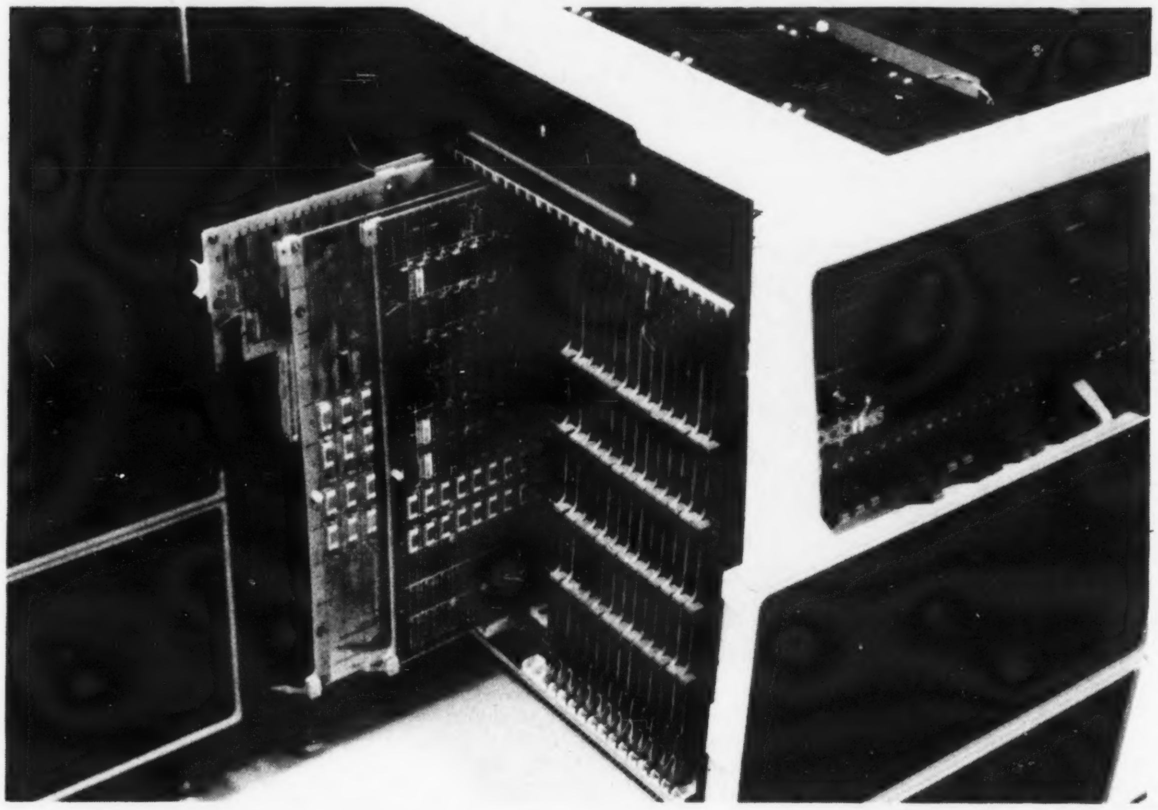
A program translates all the shipment information to the eight-channel tape, he said, saving the company from having to have the TWX machines on-line.

The TWX units are used in the traffic department, and the information is TWXed to the warehouses and the firm's brokers, Murphy noted. Three Telexes are also used; and the firm is considering some programs that would allow it to go to five-channel paper tape to send some reports out on Telex, Murphy said.

The consultant has been involved with the company since 1972, after the firm's experience with a leased 360/30 made them want to get away from cards, he said.

Presently Murphy is involved in the updating of the system and the combining of the two Basic Four systems used by Ocean Garden and its subsidiary.

Most of the applications programming has been done by Interactive Computer Systems, a Newport Beach firm, Barrancotto related. One programmer has been recently hired to work in-house.



COMPUTER INDUSTRY

CI Notes

CDC Reworking CMI Pact; Colt 45 Plans in Limbo

MINNEAPOLIS – The Colt 45, Cambridge Memories, Inc.'s (CMI) version of the IBM 370/145, is temporarily in limbo until Control Data Corp. reworks its agreement with CMI to provide for someone to manufacture the system.

According to the original agreement, CDC obtained marketing rights, but not manufacturing rights.

Since that time, however, CMI has retrenched its operations because the First National Bank of Boston called in its $16 million loan to the firm.

A CDC spokesman indicated the mainframer expects to firm up its plans in two or three weeks.

O-I Licenses Plasma Technology

TOLEDO, Ohio – Owens-Illinois, Inc. (O-I), which claims to have developed commercially marketable flat screen plasma display panels, is offering licenses on the process.

IBM is among the licensees, according to O-I, whose pilot plant for Digivue panel production can no longer satisfy demands.

The firm said it "has a strong patent position in the plasma panel field," and intends to continue to develop the technology and strengthen that position.

Supershorts

Data Dimensions, Inc. has extended its agreement with Educom, a consortium of educationally oriented nonprofit institutions.

– – –

Tymshare, Inc. has increased its investment in Cegos-Tymshare to 45% and obtained an 11% interest in Sligos. Both computer services firms are based in Paris.

– – –

Dataproducts Corp. has produced its 10,000th Model 2230, a 300 line/min printer.

– – –

General Datacomm Industries, Inc. has appointed Anixter-Pruzan, Inc. as its nonexclusive distributor in Alaska.

– – –

Monolithic Memories, Inc. has established a wholly owned Japanese subsidiary, MMI Japan KK.

Study Cites Trends in U.S.

Mini Shipments Slowing to 19%/Year

By Toni Wiseman
Of the CW Staff

SAN JOSE, Calif. – "After a decade of spectacular growth, the minicomputer industry is now experiencing a slackening in growth rate which, in the next five years, is expected to be well below the 40% compound annual growth rate of the preceding five years," a recent report by Creative Strategies, Inc. (CSI) forecast.

Even so, the domestic market will grow at a compound annual rate of 19% from 28,500 units shipped in 1975 to 68,000 units in 1980, CSI predicted. Worldwide shipments by U.S. manufacturers should reach a value of $1 billion by 1980.

For the study, CSI chose a price rather than a marketing definition of a minicomputer: "A minicomputer is a processor with operating software and peripherals where the typical configuration sells for less than $25,000."

Faced with peripherals and associated hardware representing an increasing percentage of system cost, mini makers will tend to provide a larger portion of the system, the report observed.

By 1980, the trend for minicomputer suppliers to sell complete systems will culminate in a 50-50 ratio of sales to OEMs and end users. Mini makers currently sell about 65% of their equipment to OEMs.

The study noted several reasons for the decline in mini growth. First, the market traditionally served by minis is slowly being eroded by medium- and large-scale computers, intelligent terminals, programmable calculators and, on the low end, microprocessors and microcomputers.

In addition, many minicomputer applications are becoming saturated, the report said, adding, however, that as minicomputer technology advances in terms of components, memory and architecture, new applications are evolving.

Looking at growing application areas in terms of dollars, CSI said industrial automation in 1980 will continue to lead with $208 million in equipment compared with $93 million in 1975.

Business DP will jump from fifth to second place, consuming an estimated $165 million in minis compared with $38.4 million in 1975.

CSI's category of "other" will grow from sixth to third, totaling $112 million by 1980, while fourth place will be laboratory and computational gear, a drop from second place in 1975.

Fifth place in 1980 will be DP support for $108 million in equipment compared with fourth place or $45.7 million in 1975, according to the study.

(Continued on Page 60)

Lessors Outline Changes Wanted In Federal Procurement Policy

By Molly Upton
Of the CW Staff

Although several lessors conceded the Federal government is making strides in its efforts to encourage competitive bidding, they nonetheless have a list of procedures they would like to see implemented.

Essentially the suggestions made in a *Computerworld* survey focused on actions the lessors think would allow more lessors to compete for requests for proposals (RFP) and more standardization of criteria by which some awards are judged.

Some elements mentioned include:

- Multiyear leasing.
- Wider acceptance of plug-compatible equipment.
- Quick decisions on procurement.
- Separation of maintenance from the equipment bid.
- More rules on forming groupings within bids.
- Standardization of residual value calculations.
- Standardization of what constitutes a balanced vs. unbalanced bid.

Nearly all lessors interviewed mentioned multiyear leasing high on their lists. Currently most government procurements are granted on a year-by-year basis.

However, one lessor spokesman indicated the ability to assess penalties for cancellation before the end of a system's life helps alleviate the disadvantages incurred in writing a one-year lease.

A system's life is the duration the using agency expects to keep the machine.

"The government's done a good job in structuring this. The penalties help get around the problem of the agency being unable to commit for a long-term lease," he said.

(Continued on Page 60)

OMB Orders DP Cost Cutting

WASHINGTON, D.C. – At President Ford's behest, the Office of Management and Budget (OMB) has directed federal agencies to formulate cost-cutting programs for their DP activities.

The General Services Administration (GSA) has submitted a plan, as requested, for increasing the use of "third-party" and "plug-to-plug" compatible DP rental contracts government-wide.

In a memo sent following a Presidential management meeting, OMB Director James T. Lynn focused on DP cost-cutting along with contracting out and holding down overhead costs as well as other items, such as reducing federal paperwork.

The memo asked agencies to submit plans by Aug. 23 on their intended actions in the following areas:

- Reducing the unit cost of DP.
- Eliminating nonessential or marginal computer workload.
- Reducing equipment rental through increased competition.
- Analyzing the need and methods used for expanding government computer capacity.
- Minimizing the automatic computer issuance of inaccurate or unnecessary checks and purchase orders.
- Strengthening agency DP management to overcome problems of computer fraud and security.

By Oct. 21, agencies that are large DP users must submit results of an equipment rental review to GSA, according to the memo.

"This review will identify the extent to which the agency is using 'third-party' and 'plug-to-plug' contracting techniques, the savings that have resulted and plans for extending the use of these techniques

(Continued on Page 61)

Lessors Want Some Changes in Federal RFP Procedure

(Continued from Page 59)

For instance, if an agency says its equipment will have a five-year system life, one lessor said he will give it a "very favorable rental rate, almost equivalent to commercial prices."

But he inserts penalty clauses so if cancellation occurs prior to the full system life, the agency in effect pays the rate for a lease of the shorter duration.

"A lot of people complain about [the lack of multiyear leasing funds], but I don't see the problem if they use the tools they have, such as the penalties," he said.

Jerry Israel, president of General Leasing Corp. in Rockville, Md., would like the government to mandate assessment of cancellation penalties throughout all agencies. Currently the practice is on an agency-by-agency basis, he said.

Several vendors said they would like to see wider acceptance of plug-compatible gear. "The government tries to specify plug-compatible peripherals, but it's nowhere near as good as it should be on that," Israel observed. He would prefer that the RFPs be left open to permit plug-to-plug peripherals.

The receptiveness toward plug-to-plug equipment varies among agencies, he added. "Army has made the most significant effort in permitting plug-to-plug compatibles; the Navy's been very, very slow, and the General Services Administration (GSA) has been all but impossible," he said.

Israel also pleaded for faster response in awarding bids. "GSA used to take 20 days to make a decision for a procurement when it agreed to work with third parties. It did beautifully for a year or year and a half.

"But the last nine months to a year it has been taking an average of, in my opinion, 90 days to make a decision. It's impossible to hold equipment for that long a period of time," he lamented.

Bids Without Maintenance

Three lessors indicated they prefer to offer bids without maintenance. Israel went even further and said bids should also be exclusive of software support.

For various reasons, including either of these two elements in a bid can restrict the number of bidders and in fact be used to direct bids toward certain vendors, several spokesmen observed.

One lessor said the GSA alone should have the right to restrict the number of maintenance vendors within a particular shop. Currently this is at the discretion of the individual agency or department.

On separating maintenance out of an RFP, Israel commented, "It's just as easy for the government to get it, and it has a larger ax to wield."

Another spokesman added, "This would allow the agency to procure maintenance from the federal supply schedule and eliminate maintenance pricing as a factor among those submitting bids."

A third spokesman said, "It's too hard for a lessor to pin down maintenance costs over the life of the system."

For instance, a lessor bidding a low maintenance price could well get caught in a squeeze when prices are raised by the maintenance supplier.

Conversely, if the lessor puts in a reasonable estimate of maintenance costs, the bid may appear higher than others, he said.

More Ground Rules

One lessor said he would like to see less leeway given to contracting officers in grouping items within a bid.

For instance, when procedures require that bidders contract to supply an entire group of equipment, one or two items not available to third parties will throw that group's contract to the original vendor, he said.

In certain cases, items should be broken out separately so the maximum savings can be achieved, he said. However, he acknowledged this advantage has to be balanced with the disadvantage of dealing with numerous contract awards.

"I've seen several bids where the groupings were not what I would call the most logical. But this is something that is not written up in regulations," he added, observing he would like to see some ground rules so when a lessor feels he's been "sandbagged" he can more effectively protest.

As of now, "it's judgment, and you can't really argue with that," he said.

There should be standardization of residual value calculations throughout government bids, Israel and others said.

The methods of calculating residual value vary tremendously, they added.

The government should also standardize the criteria by which an offer is judged to be balanced or unbalanced, some said. Currently the contracting officer has the discretion to call a bid unbalanced.

One element that pertains to unbalanced vs. balanced bids is purchase credits. One lessor requested that the government not accept rental credits in excess of 100%.

Although all agreed adequate delivery time after receipt of award is imperative, there was disagreement on the time needed to review specifications before submitting a bid.

While one vendor wants a month, others said this was unnecessary. "I don't think it does that much good ahead of time because everyone waits for the last three days anyway," one said.

"Right now they take too long. They give you 30 days and you only need about 10," Israel said.

"Reasonable" delivery times also vary. Thirty days for common peripheral gear isn't bad at all, one lessor said.

Mini Growth Rate Seen Slowing To 19% Annual Compound Rate

(Continued from Page 59)

The communications sector, ranked third in 1975 with a value of $67.2 million, will drop to sixth place, but the value will grow to $90 million.

Other growing application areas include specialized data and word processing, specialized data acquisition and instructional, CSI said.

Time Share 50%

In terms of domestic market share, three suppliers account for about 50% of the unit volume and nine suppliers account for almost 90%, the report stated.

"There are so many strong competitors with broad product lines and so many traditional applications nearing saturation that a new company is at a decided disadvantage," CSI noted.

"A new company will find the most likely way to carve out a niche in the market place is to offer a price-competitive product tailored for some specific applications," it added.

Other possibilities for entering the market would be large systems manufacturers integrating backward into minis; intelligent terminal suppliers who build processors packaging them as minis; or microprocessor manufacturers expanding their product lines to include minis, CSI said.

Breakthroughs in semiconductor processing are largely responsible for the rapid decrease in mini costs, the report observed.

The cost ratio of components has changed, the CSI report noted. In 1972, memory and logic constituted about 15% of the total cost of a minicomputer system; in 1975 they constituted about 5% of the cost; in the near future they will constitute probably less than 2% of the cost, CSI stated.

Associated hardware, including power supply, control panel and chassis, while dropping in cost, "will account for about 15% of the total cost of a minicomputer system in 1980 compared with 9% in 1972," the report found.

Peripherals, however, cost considerably more than processing power in a minicomputer system. The paper tape reader/punch, a moving-head disk and a printer are the most expensive items in a system, according to CSI.

'Balanced Approach'

Eclipse C/330 Shows DG Interest in Commercial Area

By Esther Surden
Of the CW Staff

SOUTHBORO, Mass. – With the introduction of the C/330 supermini model and its Interactive Data Entry and Access (Idea) software [CW, Sept. 6], Data General Corp. (DG) has demonstrated its commitment to a "balanced approach" in product announcements, according to President Edson D. de Castro.

The mini, which extends the Eclipse line upward, joins recent software, printer, memory and terminal announcements. The firm has also introduced an enhanced mid-range model Nova and the Micronova systems extending its offerings downward.

At present, the company is "very interested in the emerging commercial market," de Castro said, noting that for the moment the company is "trending toward much more sophisticated products in the marketplace.

"The customers we attract see real economies in tailoring systems to work in concert with their businesses," so DG is in no way trying to attract the first time user, he noted.

In fact, "we have no business going after the first time computer user," he noted.

"Our previous product introductions in the commercial area have responded to three customer needs: distributed processing, the growing demand for commercially oriented minicomputers and the increasing need for data base capability," de Castro said.

The new system responds to those needs, but also allows "easier implementation and use of minicomputer systems by sophisticated DP managers who must distribute DP capability to both decentralized and relatively unsophisticated users," he claimed.

The significance of the C/330 announcement, according to Rowland H. Thomas, vice-president of product marketing, lies in the software.

In the past, Thomas noted, "the flexibility provided by the C/300 and the Infos file management system required a rather high level of programming expertise, as well as a knowledge of Fortran."

The introduction of an Ansi-74 Cobol compiler six months ago broadened the firm's customer base, he added, by "allowing us to talk to certain of the Fortune 500-type companies that have large Cobol programming staffs."

The Idea software is expected to broaden the company's customer base further, Thomas said, by being attractive to companies who are "analyzing their skyrocketing program development costs."

The system should represent a way for these firms to reduce programming costs, he added.

At the same time the Eclipse with Idea software could be interesting to "the smaller companies which normally have a limited number of experienced programmers. For them, the Idea system makes possible much higher program development productivity from this limited programming staff," he said.

The system should also interest OEMs, he noted, because these companies are searching for ways to continually contain programming costs.

NCR Dundee Cuts 600 Employees

DUNDEE, Scotland – As the final phaseout of NCR's corporate plan to cease production of mechanically-based products, NCR Corp. plans to lay off 600 employees at its plant here, according to a spokesman.

Production of cash registers and accounting machines will cease, he said.

The firm has recently increased production schedules here and elsewhere for its computer and terminal products in response to an upturn in demand.

Agencies Ordered To Cut DP Costs

(Continued from Page 59)

over the next year along with estimated additional savings," the memo stated.

Agencies were also required to submit initial plans for increasing their reliance on the private sector.

By Sept. 21, agencies should review and revise their procedures for contracting out to ensure that "all in-house commercial and industrial activities are reviewed and terminated if not justified as an exception to the contracting out policy," the memo directed.

Shugart Sees Concentration Key to Market Position

By Toni Wiseman
Of the CW Staff

SUNNYVALE, Calif. – Shugart Associates' concentration on the floppy disk drive market, rather than diversifying like California Computer Products, Inc. (Calcomp) and Control Data Corp.'s may well be the reason it is currently the leading manufacturer of flexible disk drives, according to W. Ferrell Sanders, Shugart's director of marketing.

There are six to eight serious competitors in the floppy market, but it is dominated by three or four companies, namely Shugart, CDC, Calcomp and Pertec or possibly Orbus, he said.

Since Shugart shipped its first floppy in September 1973, the company has gone from substantial losses the first year to a profit before taxes of $1.9 million for fiscal 1976.

"Shugart's corporate objective is to be the industry leader in low-cost OEM disk storage peripherals," he said.

"To this end we take great pains to ensure we are providing our customers with products that are soundly engineered to assure cost-effective value," he said, adding new products are generally in direct response to user requests.

The product line now consists of the SA800 line of standard floppy disk drives, the SA3800 floppy disk subsystem and the newly introduced SA400 minifloppy, designed to fill the performance gap between the large disk and the cassette.

Sanders estimated the total OEM market for IBM-compatible units would grow to $61.2 million by 1978 and $73.6 million by 1980.

Market revenues were $600,000 in 1973, $4.5 million in 1974, $15.2 million in 1975 and should more than double to $36 million this year, he said.

As a percentage of major domestic contracts (500 units or more), Shugart estimates its market share at 64%, Sanders said. Calcomp holds 12% of the market; CDC, 10%; and Pertec, 8%, he added.

Units valued at a total of $20.3 million were shipped through 1975, he said. Shugart's percentage of the total revenue during that period was about 50%; CDC followed with 14%; Calcomp, 13%; Pertec, 6%; Innovex, 6%; and Orbus, 5%, Sanders noted.

But in terms of total units shipped through 1975 the figures, at least in terms of Shugart and Calcomp, differed significantly, he said. Shugart accounted for 40% of the 50,000 units shipped during the period; Calcomp, 23%; CDC, 12%; and Pertec, 7%, he noted.

Sanders said he felt Shugart's market penetration success was due in part to its initial presence in the marketplace as well as to the primary emphasis the company places on floppies.

In addition, Shugart had a technical edge, he noted, since founders Al Shugart and a group of nine other engineers were responsible for developing the first floppy disk technology at IBM in the late 1960s.

They also pioneered several other disk recording innovations and the floppy disk product line introduced by Memorex before leaving to form Shugart Associates, he said.

"We stand a good chance to set the standard for minifloppies because of our market share and because we will be the first in the market with the product," Sanders said.

"We have indications that others in the industry are working on minis and are waiting for the final specs on our minidiskette. This means that it is very critical that our product work, and work well, as soon as it hits the market.

"If IBM comes out with a similar product, then that will be the standard; if not, Shugart's may well be the industry standard," he stated.

Commenting on the possibility of competitors marketing floppies of varying specifications, such as a 7-in. diameter rather than Sugart's 5.25-in. diskette, Sanders felt it would behoove others to follow the standard in order not to shut themselves out of the competition.

Sanders predicted sales would climb to $16 million next year.

Tymshare Picks Three To Head New Units

CUPERTINO, Calif. – Tymshare, Inc. has formed three marketing subdivisions specializing in information services, industry services and marketing support services and reassigned three vice-presidents to head the divisions.

The move is intended to accommodate the firm's growth and increasing specialization into selected industries and application areas, a spokesman said.

Robert L. Schwartz, vice-president and division manager of the Information Services Division, has established three geographic regions as well and expanded two specialized groups to national scope.

The groups are a telephone industry marketing unit and Tymshare's Application and Systems Consultants.

Executive Corner

G. Gary Myers was named vice-president and division manager for the Industry Services Division, which is responsible for serving specific sectors such as accounting firms, cable TV operators, fuel oil dealers, health care institutions and travel agencies.

Walter J. Eissmann, now vice-president and director of marketing services, is responsible for product marketing and support, including training, documentation, terminal equipment marketing and sales development.

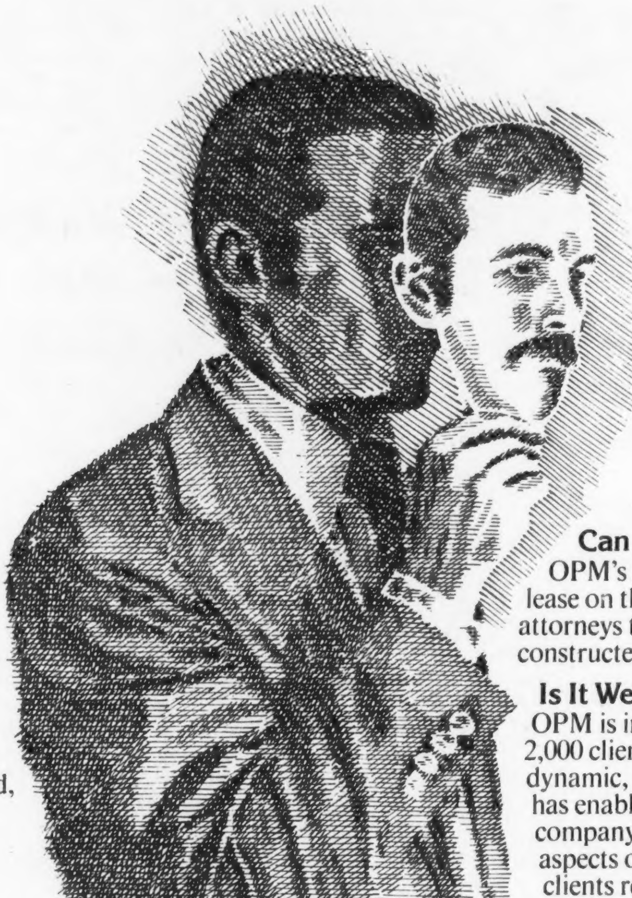
Horgan Resigns From Inforex

BURLINGTON, Mass. – Thomas B. Horgan, a cofounder of Inforex, Inc., has resigned as vice-president and director of that company.

Other Moves

- Ron Stephens has been named president of Xebec Systems, Inc.
- George B. Attig has joined Information Magnetics Corp. as vice-president and general manager of the Tape Head Group.
- J.J. Felcyn Jr. has been appointed vice-president/controller at Documation, Inc. and E.J. Cronin Jr. was named vice-president/administration.

S/370 Computer Leasing: How to Evaluate the Company Behind the Lease



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International News

Although Slow

POS Market Growth Starting in Europe

WALTHAM, Mass. – The point-of-sale (POS) market in Europe has been slow in taking off and continues to develop at a slackened pace, but growth is indeed beginning, particularly in the area of electronic cash registers (ECRs), according to *Autotransaction Industry Report* (AT/IR).

Comparisons between the U.S. and European markets are difficult since Europe has fewer and smaller chain operations and continental operations as a whole tend to be more decentralized with no dominating forces, the report said.

In the U.S., for example, 70% of POS business comes from chain operations, while in Europe only 30% to 40% comes from this area, AT/IR estimated.

ECRs

ECRs are the main area of interest at this point in Europe for several reasons: there is little need for credit authorization since many fewer checks are written than in the U.S. and credit card systems are still in their infancy.

In addition, because retail organizations in Europe are smaller and less affiliated and because scanning which requires minicomputer backup has not yet caught on, the market for on-line POS systems is substantially less dynamic than in the U.S., AT/IR said.

"The total number of terminals installed in all aspects of European retailing, including such functions as stock control and warehousing, is put at about 37,000.

"Of that, 32,000 comprise the total installed base in Europe of electronic POS machinery, including the entire ECR gamut.

"About 17,000 of those terminals perform some sort of data capture and about half of those 17,000 are on-line POS terminals," AT/IR indicated.

In the on-line market, NCR leads with 4,800 installations, followed by Litton/Sweda with 2,000, IBM with 1,000 and ICL (previously Singer) with 250, according to AT/IR.

UK Firm's $50 Million Contract Said to Be From Saudi Arabia

By Ivan Berenyi

Special to Computerworld

LONDON – Since the end of last year, industry observers have been chipping away at the mystery surrounding a $50 million contract awarded to Scicon, a British software and consulting firm.

While Scicon could not divulge any details, an early leak revealed the government involved is Saudi Arabia.

"The project is to design, supply, install and operate an integrated computer and radio communications system on behalf of a Middle Eastern government department" was all a terse announcement said.

But reliable sources have since indicated the system would include 16 computers, almost certainly Digital Equipment Corp. PDP-11/40s, with centers in Riyadh and Jeddah accounting for four of the machines and the remaining 12 being scattered around the country's frontiers.

The hardware is said to amount to half the total figure given, but that almost certainly includes some sophisticated radio communications gear from another British company, Racal.

It is this Racal contribution, estimated at over $20 million worth of equipment, that has done most to firm up ideas about what the $50 million contract could be all about.

First theories relied heavily on the known predilection of the Saudis for "man management."

Getting into, or out of, Saudi Arabia is no easy task – specific visas are needed in both directions.

Communications in Saudi Arabia are very poor, and if the government loses track of the whereabouts of someone it wants to keep its eye on, it could be months before the trail can be picked up.

So, the theory ran, Scicon's contract is for a countrywide population control system to be based on passes, with its centers in the country's two population nodes and stations at the major border crossings.

Since then, however, a rival theory has emerged. This makes the contract a purely defensive measure.

Western architects leaving Saudi Arabia recently have let the fact slip that Riyadh now has an "Air Defense Center," and it seems entirely possible the computer system and radio gear could be part of a national air defense network.

The defense theory makes still more sense because Scicon's managing director, John Ockenden, let the fact slip that Scicon was already involved in negotiations with the Saudis for a further contract, related to the mystery $50 million job, but "something four times as large."

Miti Sees Biggest Market Growth Occuring in Large -Scale Systems

TOKYO – The Japanese Ministry of International Trade and Industry (Miti) has issued a five-year forecast stating that large-scale computers, with an average purchase price of $833,000 and up, hold the greatest revenue potential within the Japanese mainframe market, according to *EDP/Japan Report* (EDP/JR).

Miti estimated the total value of installed computers will increase from $7.627 billion to $18.2 billion over the next five years.

An estimated 65.8% of this additional value will occur in the large-scale class, Miti stated, with the user base growing from $4.46 billion in 1975 to $11.4 billion by 1980.

Miti cited several reasons for the anticipated growth, including the increasing requirements for large memory and communication management capabilities of corporate users as they become committed to data base and teleprocessing networks, according to EDP/JR.

While Miti predicted large-scale computers will grow from 58.5% of the installed value in 1975 to 62.7% in 1980, medium-scale computers will drop from 28.2% to 25.8% during the same period, with small systems dropping from 8.2% to 6.8%.

Foreign Orders & Installations

Swiss Postal Telephone and Telegraph Authority has ordered 4,800 bit/sec modems from Racal-Milgo Ltd. to upgrade its telephone directory inquiry service.

Mitsui Mutual Life Insurance Co. of Tokyo has ordered a Univac 90/60 system to replace two Neac 2200 systems.

BPM de Mexico S.A., a Mexican DP marketing organization, has ordered $750,000 of computer equipment from Century Computer Corp.

Banco Espanol en Londres S.A. has ordered two NCR Century 8200 minicomputers for an on-line banking system linking its London and Liverpool branches.

The Proctor and Redfern Group, a Canadian consulting engineering firm, has installed a Hewlett-Packard Model 3000CX system for on-line processing.

Hirosaki Mutual Bank in Aomori, Japan, has installed a Univac 1106 system as the center of an integrated on-line banking system linking 52 offices.

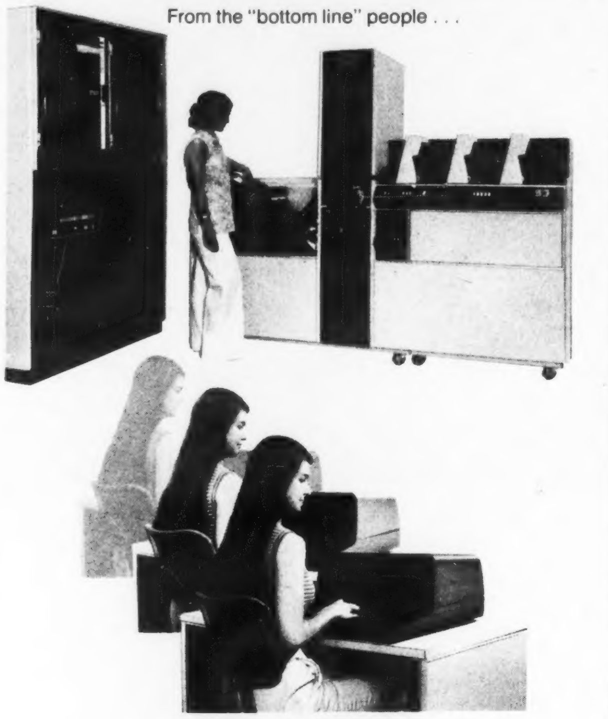
Iberia Airlines, Spain's national airline, has ordered intelligent terminals from Incoterm valued at $1.1 million.

Computer Facilities, Ltd., a British service bureau, has ordered an NCR Century 8200 minicomputer system as an initial step in providing on-line services.

Shell Oil U.K. has ordered 15 Micos turnkey systems from Mini-Computer Systems, Inc.

Macarthys Ltd., a British pharmaceutical distributor, has ordered 4,800- and 9,600 bit/sec modems from Racal-Milgo Ltd.

Esco Computing Ltd., a Scottish service bureau, has ordered a Univac 90/60 system.



Cadapso Gives Approval to White Paper Limiting DP Services Offered by Banks

TORONTO – A white paper by the Canadian Finance Minister has proposed restricting banks from selling DP services and limiting bank ownership in DP firms to a maximum of 10%.

The Canadian Association of Data Processing Service Organizations (Cadapso) sees the government white paper as "a strong endorsement of the stand the computer services industry has taken," according to Cadapso President Richard G. Taylor.

In addition to limiting ownership, bank-offered DP services would be limited to the making of payments, classification of deposits and payments, check reconciliation, preauthorized debits and credits, payroll preparation plans, or DP in connection with a factoring service.

The white paper expressed concern about possible unfair competition, concentration of economic power and conflict of interest if banks were to operate "both as commercial lenders and as sellers of computer services."

It further noted that most computer service companies in Canada are small, operate on a local or regional scale and compete successfully with foreign-owned companies.

"It is noteworthy that the white paper makes a point of stating that Canadian independent data processors will be able to meet the growing demand for data processing services in Canada," Taylor said.

"It also observes that our industry has competed successfully with foreign-owned companies and that control of the industry will remain in Canadian hands.

International News

"We have regarded the issue of unfair bank entry as one which was crucial to the survival of an independent, Canadian-controlled computer services industry. The decision of the federal government to opt for a vigorous and self-reliant industry reflects our judgment that we are best equipped to meet the needs of computer services users," Taylor said.

For the banks, the proposal would mean they will be prohibited from engaging, directly or indirectly, in DP services such as small business accounting.

Small Business System Installations Seen Doubling by 1980 in Germany

FRANKFURT, Germany – Installations of small business computers in Germany, now about 80,000, will double by 1980, according to Dr. Hans-Joachim Grobe of Diebold Deutschland GmbH.

The entrance of IBM into this market has caused mixed feelings among the established firms, Grobe pointed out. On the one hand they accept the "consecration" of their market; on the other hand, they fear the "mighty competitor."

Grobe highlighted an important difference between American minicomputers and German small business systems: The great success of the systems in Germany is based on the wide systems support the manufacturers provide.

The vendors offer a wide range of application software packages, easily adaptable to users' individual needs, whereas U.S. attempts to enter the field of commercial applications are still in their infancy, he said.

Services to Play Big Role in CDC's Financial Future

NEW YORK – With "good improvement" expected for Control Data Corp.'s second half and 1976 earnings, computer services are expected to play an increasing role in CDC's projected revenue growth during the next few years, company officials recently told analysts here.

Total revenues are expected to grow to $3 billion by 1981 compared with $1.9 billion last year; the portion contributed by computer services should grow to 33% compared with 24% last year, Chairman William C. Norris said.

Looking at the four major components' revenue contributions last year, Norris said Commercial Credit accounted for 35%; computer systems, 24%; computer-related services, 24%; and computer peripheral products, 17%.

In 1981, the breakdown will be approximately one-third computer services, one-third financial services and one-third equally divided between computer systems and peripheral products, he added.

"Clearly it is the computer services business that will lead the expansion. In 1975, our computer-related services business contributed about $450 million of revenue," Norris said.

"In the current year, 1976, this should rise about 12% to about $500 million," he added.

"I would expect computer services to double by the end of 1981 and approach $1 billion," he continued.

There are several reasons why CDC is so interested in the services market: a rapid growth rate has been projected for the next five years; services promise a greater return on capital employed; and the firm has built up a "substantial body of expertise" in this area.

In addition, Commercial Credit's "position in consumer and commercial markets will further enhance our computer services strategy," he said.

CDC's integrated services marketing approach offers both Commercial Credit financial and insurance services as well as CDC education and other data services to specific target markets.

Looking at the international scene, both present and future, Norris berated U.S. government policy for thwarting growth in this area.

CDC's international business currently accounts for about one-third of its computer business revenues, he observed.

"The areas of opportunity abroad include the Soviet Union and Eastern European countries where, depending on U.S. policy, there is an $8 billion to $10 billion potential export market for U.S. computer companies over the next 10 years.

"If our government would take a more rational export view, U.S. computer companies by 1985 could be making sales to these countries in excess of $2 billion per year – 100,000 jobs by 1985.

"By way of comparison, this is about the same number of jobs as in the U.S. semiconductor industry," Norris said.

Marvin G. Rogers, senior vice-president of finance, told analysts the firm plans to achieve a "gradual but sustainable improvement in profitability" over the next several years.

For 1977, he expects computer services revenues and profit levels to improve. Earnings should be higher from computer systems because of a greater number of Cyber 170s in its lease base.

The peripheral products operations should turn in improvements because of improving order rates, he said.

And Commercial Credit should contribute increased earnings both as a result of improvement in the insurance business and from higher levels of cash employed in financial services, Rogers said.

As an indication of the firm's asset management program, Rogers said last year total debt was reduced $83 million. Also, revenue per employee, which was about $30,000 in 1974, rose to $36,000 in 1975, he said.

Computer business debt is expected to remain about level over the next few years, he said, adding he expects increased intercompany financing.

Debt to equity in computer business should decline to a ratio of 1:1 compared with about 2:1 at the end of last year, he said.

ESE Forms Unit

WELLESLEY HILLS, Mass. – ESE Ltd. has formed a subsidiary, ESE Electronic System, Inc., to market and support its telephone traffic data analyzer in the U.S.

The firm is at 36 Washington St., Wellesley Hills, Mass. 02181.

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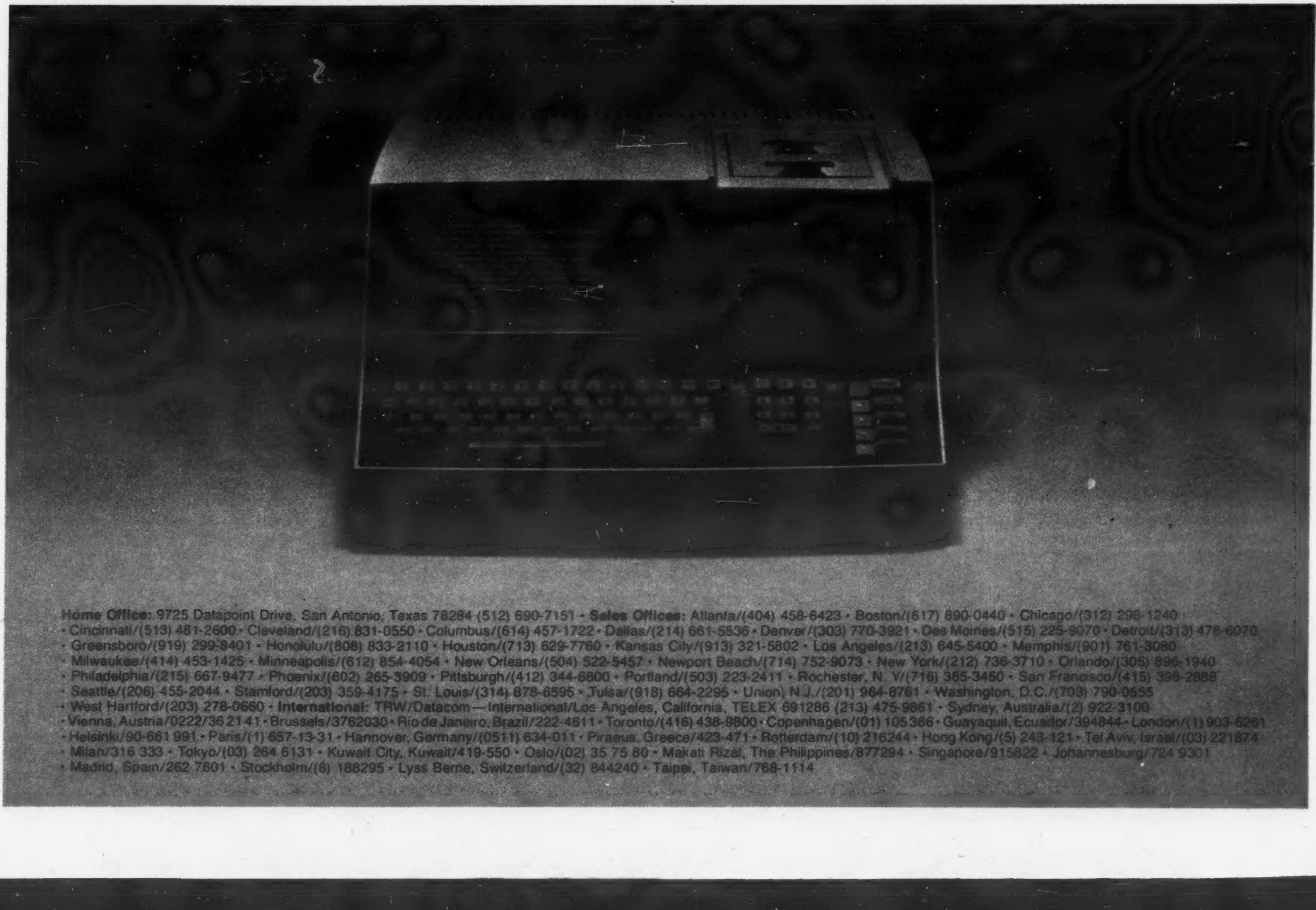

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Two Observers Predict

Service Industry to Pass $9 Billion Mark by 1980

COLUMBUS, Ohio – The computer services industry will grow from annual revenues of nearly $4 billion in 1975 to over $9 billion in 1980, two computer industry observers said here recently.

Gilbert Mintz, president of Broadway Associates, a financial consulting firm, told analysts the rapid and fairly stable growth of the industry warrants investor attention.

"This industry is legitimized. It has credibility and should be given a serious look by the investment community in the future," Mintz said.

Peter Cunningham, president of Input, a computer services consulting firm, explained that "increased complexity and costs of internal DP are reasons why more companies across the country will increase their use of the computer services industry to meet their internal needs.

"In many cases the industry is providing all DP support for a client and may even operate a computer on-site for that client," he said.

"Today there are a large number of firms in the computer services industry doing very well regarding profits," he added, "and by 1980 there will be several doing over $500 million each year."

Reasons for Growth

Outlining reasons for the continuing growth of the industry, Cunningham said "it has become the lifeblood of many companies. Businesses have become very dependent on the services industry to solve problems.

"Second, there's a better understanding of the computer services industry and what it can do for businesses. And the time value of information to companies is ever-increasing. The computer services industry can provide needed information at the fingertips of a company's management staff."

Mintz said the stability of the computer services industry has made it attractive to the investor. "The industry's continuing revenue base is a tremendous asset because you can predict that the next year's revenues will be higher than the past year's," he noted.

"There is also good cash flow in the industry, few inventory problems and few seasonality factors; we can anticipate our work flow very accurately and plan for it very effectively," he added.

The computer services industry is also somewhat resistant to economic cycles, according to Mintz.

"In 1974, one of the worst recessionary periods in recent history, the computer services industry continued to grow at a 15% growth rate," he said. "Other reasons for the industry's attractiveness include results at a known cost, companies' increasing desire for all kinds of economic information and a very powerful inertia factor," he said.

Gilbert Mintz

Peter Cunningham

"Once people begin to use the services, they become somewhat narcotic. The old skills vanish and companies just continue using the new services provided by this industry."

In addition, Mintz said, "manpower is getting more expensive while the services of the computer services industry are getting less expensive; thus, to most companies, the industry means a substantial bargain."

Contracts

HP Picks Dataproducts

WOODLAND HILLS, Calif. – Dataproducts Corp. has received a contract from Hewlett-Packard Corp. (HP) for the supply of printers ranging from 300- to 1,800 line/min.

The contract, which is the largest between the two firms, could represent $15 million in shipments, including spares, over three years, Dataproducts said.

The printers will be used with the HP 3000 Series II as well as the 9600 minicomputer, Dataproducts said.

Other Awards

Pfizer Medical Systems, Inc. will use Ramtek Corp.'s RM-9100 Medical Imaging Display Systems in its Acta-Scanner whole-body computerized tomographic scanner.

Applied Data Communications has selected Pertec Corp. to supply it with rigid and flexible disk drives. Deliveries extend through November 1977.

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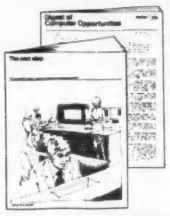

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South & Southwest: Atlanta (404/634-5127), Dallas (214/638-4080), Fort Worth (817/338-9300), Houston (713/626-8705), New Orleans (504/523-2576).
West Coast: Los Angeles (213/386-5500), Irvine, CA. (714/833-1730), Palo Alto (415/328-7155), San Francisco (415/434-2410).

source edp

DIRECTOR OF DATA PROCESSING

STATE OF NEW MEXICO

The centralized data processing department is filling the position of director. Incumbents must have 10 years of varied data processing experience of which at least 5 years have been in a management capacity in a large scale IBM shop. (OS or OS/VS environment). Incumbent will be responsible for all aspects of data processing including procurement, budget, planning, systems development and operations. Current hardware is 370/158 and 370/145: staff numbers 140. Salary negotiable. Send resumes and salary requirements to: Ralph Trigg Dept. of Automated Data Processing PERA Bldg. Rm. 103 Santa Fe NM 87503.

INFORMATION SYSTEMS PROFESSIONALS

The City of Albuquerque needs a few good people to help in the development of the best data processing organization in the Southwest. We provide total Information Systems support for a beautiful city of 300,000 nice people and are embarking upon a major expansion of the Data Processing organization. This is a real-time oriented shop (370/145, DOS-VS, CICS) with fully interactive development capabilities.

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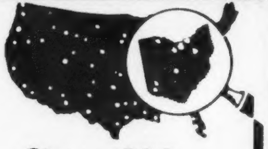
EDP Careers



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To design and implement systems support software including assemblers, compilers, simulators, and linkage editors for a family of airborne minicomputers. FORTRAN and Assembly language programming background on System 370 or equivalent large scale computers required. Experienced personnel as well as new graduates are encouraged to apply.

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Large regional computer center providing services to the University of Cincinnati, Miami University, and a variety of nonprofit organizations, has immediate, existing openings for Programmers at all levels — Computer Programmers, Programmer/Analysts, Senior Programmer/Analysts and Systems Analysts. A minimum of 3 years experience with medium to large scale computer systems is desirable. A background in commercial/academic and scientific applications and experience in the use of PL/1 or COBOL are desirable.

Resumes MUST contain current salary and minimum salary requirements. Sent resumes to:

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SouthWestern Ohio Regional Computer Center
University of Cincinnati
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The position offers excellent compensation and fringe benefits, good opportunity for advancement in management and a stimulating work setting. Send resume with salary history, in confidence, to: Manager of Employee Relations, Datapoint Corporation, 9725 Datapoint Drive, San Antonio, Texas 78284.

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Client companies are Fortune 500 offering state-of-the-art environments and excellent internal growth. For a confidential and professional effort in your behalf send resume to:

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EDP Search Division
1000 R.I.D.C. Plaza, Suite 102
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2223 West Loop South, Suite 400
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(512) 452-0971
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Minimum 2 years experience on System 370 OS/VS/VM or PARS.

IMS Applications Programmers

PARS Applications Programmers

Degree and minimum of 1 year experience.

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Both positions will utilize past experience working with CDC 6000 or 7600 computers. Salary range, both positions $16,440-$25,140 yearly.

Submit resumes to Dorita Crosby
Employment Office
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Berkeley, CA 94720

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A world-wide leader in the offshore engineering and construction industry has positions available in the Systems and Operations Department of its New Orleans Office.

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Responsibilities include definition, organization, protection and documentation of Company Data Base activity as well as strong user interface. Knowledge and experience in COBOL, PL/1 and IMS/VS data base dictionary implementation required. CICS/VS knowledge helpful.

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Senior Level Systems Programmer with extensive experience in HASP, VS 2 (SVS), and teleprocessing desired.

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Cullinane Corporation

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  Manufacturing Environment
- Programmer Analyst
  Manufacturing Environment
- Sr. Programmer Analyst
- Systems Support Manager
- Software Specialist

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SENIOR SYSTEMS PROGRAMMERS needed in the Baltimore/Washington area to provide maintenance and engineering support for SIGINT/ELINT data collection processing systems. Must have at least 5 years' experience with DEC PDP-11 series computers and 2 years' experience in RSX-11D operating systems.

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We invite qualified candidates to send their resume and salary history/requirements to Professional Employment, Dept. JJL-3

Aeronutronic Ford

Aeronutronic Ford Corporation

Western Development Laboratories Division
3939 Fabian Way
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Computer Engineers

Systems and Software

The Point-of-Sale Terminal Systems is an expanding market for computer industry and, accordingly, highly competitive. To maintain NCR's lead position in the field, the P.O.S. Division requires the talents of experienced Systems Engineers and Software Engineers with mini and microprocessor exposure. Below are just samples of current professional opportunities – there are a number of others for which you might well qualify and be interested in pursuing. We invite you to send your credentials, including your area of work interest, for consideration.

SOFTWARE SYSTEMS ENGINEERS

To define and develop overall total systems level software architecture required for future terminal control systems (retail). This will include operating system software, system level simulations, system level diagnostics, and communications (from the Point-of-Sale through the "host" processor).

SR. SYSTEMS ENGINEER

To be responsible for total systems design for Point-of-Sale terminal. Will conduct evaluation of system requirements and development of the technical approach. Experience in application of mini/micro computers to real-time, interrupt drivers processing requirements. Must be capable of performing hardware/software tradeoff evaluations as well as analyzing hardware and software designs and resolving conflicts.

SYSTEMS ENGINEER

To plan and coordinate the development of systems software architecture for real-time microcomputer system and the telecommunications software for both minicomputer and large scale computer systems. Perform analysis and systems design including hardware/software tradeoffs with emphasis on software implementation. Will be coordinating with marketing to determine customer needs and requirements relative to Point-of-Sale systems and telecommunications. Knowledge of high level languages – (FORTRAN, COBOL, etc.) and of telecommunications disciplines – VTAM, BTAM, bisync, etc. Operating systems knowledge and experience desirable.

SYSTEMS DESIGN ENGINEERS

To analyze both hardware and software designs to guide effective system tradeoffs and determine system performance based on hardware/software constraints. This individual will provide design support to the product development groups.

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NCR

Robert W. Donovan
Terminal Systems Division -- Cambridge
NCR Corporation
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COBOL, DOS/OS. to $13,500 +

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1-2 years experience, degree a plus. IBM 370/155/158, COBOL, ASSEMBLER, DOS/VS, OS, Business Applications. IMS, DL-1 helpful. to $16,000

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COBOL, FORTRAN, DOS/OS, IMS, DL-1, Varied Applications. to $19,200 +

Software Specialists (To Senior Positions)

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Systems Analysts

370/158/168. Design and Implementation. COBOL, PL-1, Business or Manufacturing Applications. to $21,600 +

Senior Systems Analysts

370/155/148. Design and Implementation. Banking/Business Applications. to $22,000 +

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360/370, COBOL/High Level Languages, Modeling, Troubleshooting, debugging. Strong ability to establish client needs, follow through, and work on own; initiative a must. Some travel within St. Louis Metro Area. to $22,000 +

This is ONLY a partial listing of the Data Processing opportunities available. If you are interested in these challenging positions call NOW or rush resume and let's get together.

james franklin & associates

Human Resource Consultants

Data Processing Division
502 Earth City Plaza, Suite 120
Earth City (St. Louis), Mo. 63045
(314) 291-6880

Professional Nationwide Search. Client Companies assume fees.

Programmer Analyst

Old Dominion University invites applications for a Computer Analyst/Programmer on a three year NSF-funded project for the improvement of science education with possible continuation beyond the duration of the grant with the University Computer Center. Candidates should have a B.S. in Computer or Physical Sciences, at least two years of experience in the creation and maintenance of computer assisted and computer managed instructional software as well as experience with the DEC system-10 or other major time-sharing systems and University computer facilities. Salary range is $13,500 to $15,000 depending on experience. Candidates should forward resume and two letters of reference to Dr. Dennis A. Darby, ODU-CAUSE Coordinator, Dept. of Geophysical Sciences, Old Dominion University, Norfolk, Va. 23508. *Old Dominion University is an equal opportunity affiramtive action employer.*

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For further information on these and other positions, send resume in strict confidence to:

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32 W. Randolph St.
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Data Base Administrator

City of Flint is recruiting for a Data Base Administrator, Salary $17,299-$21,442. Requires education equivalent to Bachelor's Degree in Computer Sciences, Business Administration, math or related field and at least 5 years experience in systems design and analysis, programming and operations with at least 3 of the 5 years in a position of administrative responsibility in a data processing installation using a Data Base Management System — use of Cincom Systems, Inc. Additional experience may be substituted year for year for each year of required college.

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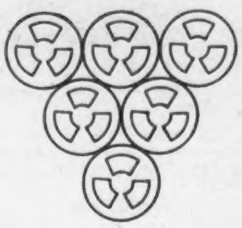

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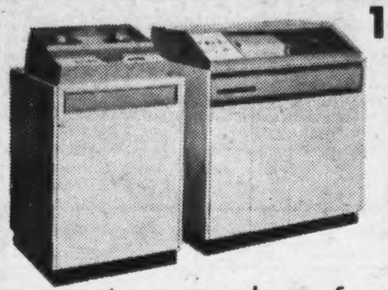

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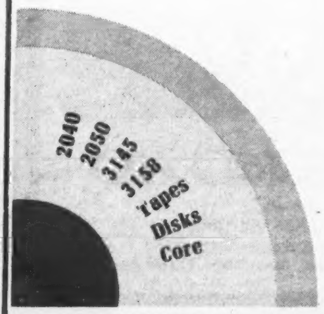

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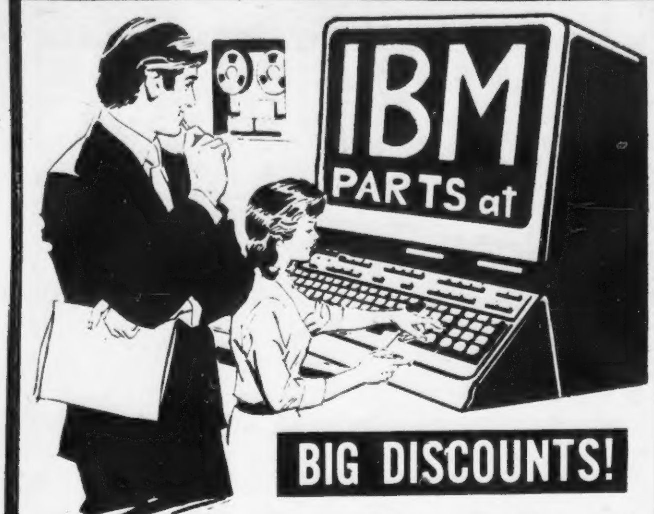

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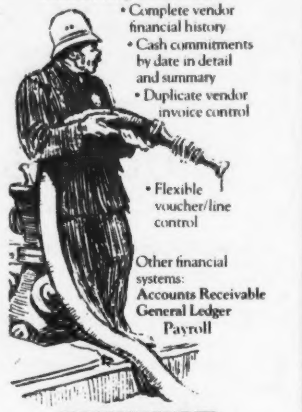

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REI Results Improve in Nine Months

DALLAS – Recognition Equipment, Inc.'s (REI) earnings and revenues rose both in the third quarter and nine months ending July 31.

The firm has begun shipments of its optical character recognition (OCR) wands under a $15 million contract, delivering $1.4 million during the third quarter.

Another $2.4 million of wands is expected to be delivered by the end of the fiscal year in October, the firm said.

During the quarter, revenues rose to $15.6 million compared with $13.5 million in the same period last year.

Earnings totaled $1.2 million or 21 cents a share compared with $733,000 or 12 cents a share in the year-ago quarter.

Nine-Month Results

During the nine months, revenues rose to $48.8 million compared with $42.5 million in the same period last year. These figures include revenues from noncancellable long-term leases treated as sales of about $6 million and $3.4 million respectively.

Including a tax credit of nearly $1.5 million, earnings for the nine months rose to $4.2 million or 71 cents a share compared with $2.1 million or 36 cents a share in the year-ago period, when the tax credit totaled $965,000.

Backlog of firm orders for lease and purchase rose to $45.2 million from $41.5 million a year earlier, boosted by the remaining $13.6 million of wands to be shipped.

The purchase value of equipment shipped during the first nine months reached $25.1 million compared with $19.1 million a year ago.

CA Year Earnings Double

IRVINE, Calif. – Computer Automation, Inc.'s (CA) 1976 earnings more than doubled, rising to a record $3.1 million or $1.60 a share compared with $1.2 million or 70 cents a share in 1975.

Revenues for the year ended June 27 grew 42% to a record $30.4 million compared with $21.4 million. Pretax income was 20% of revenues compared with 11% for the prior year.

The record earnings were attained despite start-up costs for the firm's Syfa distributed data processing system being handled by the firm's Commercial Systems Division, according to President David H. Methvin.

During the fourth quarter, earnings more than doubled to $885,000 or 46 cents a share compared with $392,000 or 22 cents a share in the same period last year.

Revenues jumped to $8.1 million compared with $5.8 million in the year-ago quarter.

The firm plans to double its production facilities next year.

Milgo Net Cut in Half

MIAMI – Milgo Electronic Corp.'s nine-month earnings dropped to half of those in the same period last year.

Revenues for the period were off to $29 million compared with nearly $30 million in the year-ago period.

Earnings dropped to $1.4 million or 82 cents a share compared with $3.3 million or $1.94 a share in the nine months ended Sept. 30, 1975.

The 1975 figure included $415,000 from Racal Electronics Ltd. for adjustments in the Racal-Milgo agreement.

During the quarter, revenues rose to $10.1 million compared with $9.3 million while earnings dropped to $532,000 or 30 cents a share compared with $861,000 or 51 cents a share in the same period last year.

Nickels & Dimes

Prime Computer's revolving credit line with First Pennsylvania Bank has been increased by $3 million, bringing the total to $10 million. The expiration date has been extended one year to Dec. 31, 1978.

$$$

National Semiconductor expects sales and earnings for the first quarter which ends Sept. 19 to be below those of last year's fourth quarter because of manufacturing problems with its semiconductor digital watch components which are resulting in reduced output.

$$$

The Palmer Organization has invested $250,000 in **Sigma Four**, which was founded in December to develop, manufacture and market telecommunications equipment.

$$$

Cubic declared its second semiannual dividend of 14 cents a share payable Sept. 20 to holders of record Aug. 20.

$$$

Western Union International raised its regular quarterly dividend to 20 cents a share payable Sept. 13 to shareholders of record Aug. 13.

$$$

Management Assistance, Inc. has authorized a special shareholders meeting to approve an amendment to the company's Certificate of Incorporation which would effect a one-for-four reverse stock split of its common stock.

$$$

Federal Screw Works' directors have voted a 100% stock distribution, raised the quarterly cash dividend rate 20% to 18 cents and declared an extra cash dividend of 40 cents a share, all payable Sept. 15 to holders of record Sept. 3.

$$$

Automatic Data Processing's common stock has been admitted for trading on the Midwest and Pacific Stock Exchanges.

$$$

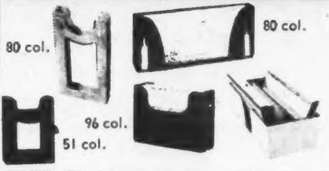
National Computer Systems has declared a quarterly dividend of 5 cents a share payable Sept. 28 to holders of record Sept. 3.

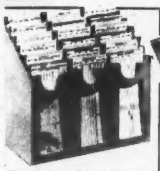
$$$

Computer Optics has signed a lease financing agreement with Funding Systems Corp. providing for Funding Systems to purchase, over a three-year period, up to $10 million of Computer Optics' equipment covered by firm-term leases of three years or longer.

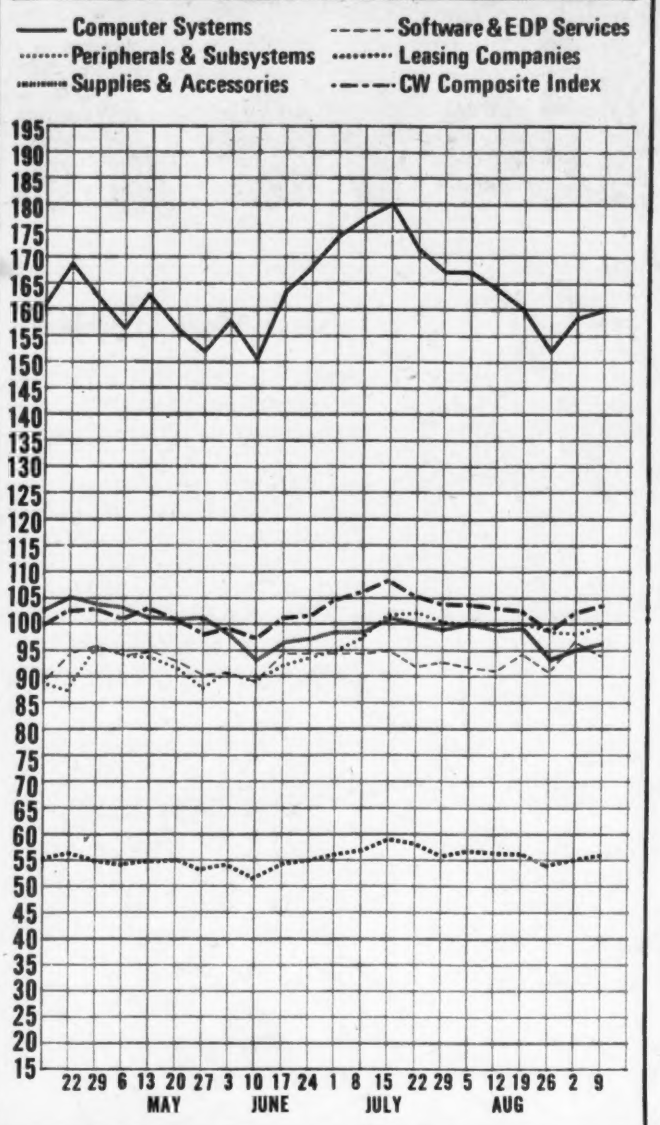
$$$

Quotron Systems has arranged for a term loan up to $6 million from First Pennsylvania Bank.





COMPUTERWORLD Computer Stocks Trading Indexes



Earnings Reports

NATIONAL DATA COMMUNICATIONS

Three Months Ended April 30

	1976	1975
Revenue	$619,551	a$582,383
Spec Chg	.....	b22,634
Loss	59,710	38,778
6 Mo Shr	.....	.02
Revenue	1,101,245	a1,256,687
Tax Cred	.....	9,165
Earnings	(228,884)	30,857

a-Restated. b-Adjustment to tax-loss carryforward.

ON-LINE SYSTEMS

Year Ended April 30

	1976	1975
Shr Ernd	$.97	$1.50
Revenue	11,957,027	11,433,706
3 Mo Shr	.42	.10
Revenue	3,662,925	2,400,176
Earnings	356,251	82,599

SCAN-DATA

Three Months Ended March 31

	1976	a1975
Shr Ernd	$.01	$.05
Revenue	3,287,408	2,476,446
Tax Cred	3,600	26,600
Earnings	16,528	76,133

a-Restated.

VANIER GRAPHICS

Year Ended March 31

	1976	1975
Shr Ernd	$.76	a$.94
Revenue	26,347,743	21,279,370
Earnings	817,531	979,471

a-Adjusted to reflect three-for-two stock split in July 1975.

WYLE LABORATORIES

Three Months Ended April 30

	1976	1975
Shr Ernd	$.25	$.11
Revenue	35,167,000	28,992,000
Earnings	885,000	381,000

WYLY

Three Months Ended March 31

	1976	a1975
Revenue	$15,991,000	$15,654,000
Disc Op	.....	711,000
Loss	5,182,000	2,594,000

a-Restated.

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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, SEPTEMBER 8, 1976

All statistics compiled, computed and formatted by
TRADE★QUOTES, INC.
Cambridge, Mass. 02139

EXCH		PRICE			
		1976 RANGE (1)	CLOSE SEP 8 1976	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	34-108	93 3/4	- 1/8	-0.1
O	COMPUTER AUTOMATION	10- 19	17 3/8	+ 3/8	+2.2
N	CONTROL DATA CORP	18- 27	23 3/4	+ 1/2	+2.1
N	DATA GENERAL CORP	40- 60	49 1/2	+ 3/4	+1.5
O	DATAPOINT CORP	24- 46	38	+2	+5.5
O	DIGITAL COMP CONTROL	2- 7	5 3/8	0	0.0
N	DIGITAL EQUIPMENT	138-181	168 3/4	+5	+3.0
N	ELECTRONIC ASSOC.	2- 5	2 5/8	+ 1/8	+5.0
A	ELECTRONIC ENGINEER.	7- 16	9 3/8	+ 7/8	+10.2
N	FOXBORO	28- 47	45 5/8	- 3/4	-1.6
O	GENERAL AUTOMATION	5- 11	6 3/4	- 1/4	-3.5
O	GRI COMPUTER CORP	1- 1	5/8	0	0.0
N	HEWLETT-PACKARD CO	85-117	91 1/2	+ 3/4	+0.8
N	HONEYWELL INC	34- 56	45 1/2	+ 1/4	+0.5
N	IBM	227-280	277	+ 1/8	0.0
O	MANAGEMENT ASSIST	1- 3	1 5/8	-	-3.5
O	MEMOREX	18- 33	20 1/8	-2 3/8	-10.5
O	MICRODATA CORP	10- 27	27 3/8	+1 3/8	+5.2
O	MODULAR COMPUTER SYS	5- 14	4 1/2	- 1/2	-10.0
N	NCR	24- 36	36 1/4	+2 3/8	+7.0
O	PRIME COMPUTER INC	4- 14	13 3/4	+1 3/4	+14.5
N	PERKIN-ELMER	19- 27	22 5/8	+1 3/8	+6.4
N	RAYTHEON CO	45- 66	62	+2 1/2	+4.2
N	SPERRY RAND	40- 52	48	+ 1/2	+1.0
O	SYCOR INC	19- 31	21 1/2	- 1/2	-2.2
A	SYSTEMS ENG. LABS	6- 10	7 3/8	+ 3/8	+5.3
N	VARIAN ASSOCIATES	13- 17	14 1/4	0	0.0
A	WANG LABS.	11- 20	16 3/4	+ 1/4	+1.5
	LEASING COMPANIES				
O	COMDISCO INC	3- 10	7 3/4	+ 1/4	+3.3
A	COMMERCE GROUP CORP	2- 3	2 1/8	- 1/4	-10.5
A	COMPUTER INVSTRS GRP	1- 3	1 5/8	- 3/8	-18.7
M	DATRONIC RENTAL	0- 1	1 1/8	0	0.0
A	DCL INC	1- 1	5/8	-	-9.1
N	DPF INC	5- 8	7	+ 1/4	+3.7
N	ITEL	6- 15	13 3/8	+1 1/8	+9.1
N	LEASCO CORP	6- 19	17 1/2	+ 3/4	+4.4
O	LEASPAC CORP	0- 1	1/4	0	0.0
O	NRG INC	0- 1	1/2	+ 1/8	+33.3
A	PIONEER TEX CORP	6- 9	7 1/8	+ 3/8	+5.5
N	U.S. LEASING	7- 12	9 1/2	+ 1/2	+5.5
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	1 3/4	- 1/4	-12.5
O	ANACOMP INC	6- 11	6 1/8	-1 7/8	-23.4
A	APPLIED DATA RES.	2- 4	3 1/2	- 1/8	-3.4
N	AUTOMATIC DATA PROC	17- 35	31	0	0.0
O	COLEMAN AMERICAN COS	2- 6	2 5/8	+ 3/8	+16.6
O	COMPUTER DIMENSIONS	3- 7	5 1/4	0	0.0
O	COMP ELECTION SYSTMS	5- 9	6 1/4	+ 1/2	+8.6
O	COMPUTER HORIZONS	1- 2	1 1/2	- 1/4	-14.2
O	COMPUTER NETWORK	2- 6	3 5/8	0	0.0
N	COMPUTER SCIENCES	4- 9	6 1/4	0	0.0
O	COMPUTER TASK GROUP	1- 1	1	0	0.0
O	COMPUTER USAGE	3- 6	3	0	0.0
O	COMSHARE	2- 9	5 3/4	0	0.0
O	DATA DIMENSIONS INC	2- 4	2 3/4	0	0.0
O	DATATAB	1- 1	1 3/8	0	0.0
N	ELECTRONIC DATA SYS.	12- 18	15 5/8	- 7/8	-5.3
O	INFONATIONAL INC	1- 1	1/8	- 1/4	-66.6
O	INSYTE CORP	1- 3	1 3/4	- 1/8	-6.6
O	IPS COMPUTER MARKET.	1- 2	1 1/8	0	0.0
O	KEANE ASSOCIATES	2- 4	2 5/8	0	0.0
O	KEYDATA CORP	2- 5	1 7/8	- 1/8	-6.2
O	LOGICON	3- 4	3 1/2	0	0.0
A	MANAGEMENT DATA	1- 3	2	- 1/4	-11.1
A	NATIONAL CSS INC	13- 25	21 3/8	- 7/8	-3.9
A	ON LINE SYSTEMS INC	18- 22	20 1/4	+ 1/4	+1.2
N	PLANNING RESEARCH	3- 5	3 5/8	- 1/4	-6.4
O	PROGRAMMING & SYS	1- 1	3/8	0	0.0
O	RAPIDATA INC	2- 5	2 3/8	+ 1/8	+5.5
O	REYNOLDS & REYNOLD	13- 21	16	+ 1/4	+1.5
O	SCIENTIFIC COMPUTERS	1- 1	7/8	+ 1/8	+16.6
O	TYMSHARE INC	19- 28	26 1/8	+1 3/8	+5.5
A	URS SYSTEMS	3- 5	3 3/8	0	0.0
N	WYLY CORP	2- 7	1 5/8	+ 1/8	+8.3
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	8- 13	9	- 1/4	-2.7
O	ADVANCED MEMORY SYS	4- 10	6 7/8	+ 3/4	+12.2
N	AMPEX CORP	5- 10	7 1/4	- 1/8	-1.6
O	ANDERSON JACOBSON	2- 4	2 7/8	+ 1/8	+4.5
O	APPLIED DIG DATA SYS	13- 25	19 1/4	-2	-9.4
O	BEEHIVE MEDICAL ELEC	3- 9	8 5/8	+ 5/8	+7.8
A	BOLT,BERANEK & NEW	7- 11	8 1/2	+ 5/8	+7.9
N	BUNKER-RAMO	5- 10	7 7/8	+ 3/8	+5.0
A	CALCOMP	4- 7	4 7/8	0	0.0
O	CAMBRIDGE MEMORIES	0- 6	5/8	0	0.0
N	CENTRONICS DATA COMP	20- 36	31 5/8	+1	+3.2
O	CODEX CORP	22- 42	37	0	0.0
O	COGNITRONICS	1- 1	7/8	0	0.0
O	COMPUTER COMMUN.	1- 6	5 1/4	+ 1/8	+2.4
O	COMPUTER CONSOLES	4- 7	5 3/4	0	0.0
A	COMPUTER EQUIPMENT	1- 3	1 5/8	0	0.0
O	COMPUTER TRANSCEIVER	1- 3	7/8	0	0.0
O	COMTEN	4- 9	7 5/8	+ 5/8	+8.9
N	CONRAC CORP	20- 25	21 3/4	+ 1/8	+0.5
O	DATA ACCESS SYSTEMS	1- 4	3 3/4	0	0.0
O	DATA 100	7- 13	9	+ 1/8	+1.4
A	DATA PRODUCTS CORP	5- 15	13	0	0.0
O	DATA TECHNOLOGY	1- 2	1 5/8	- 1/8	-7.1
O	DATUM INC	1- 2	1 3/8	- 1/8	-8.3
O	DECISION DATA COMPUT	1- 4	1 5/8	+ 1/8	+8.3
O	DELTA DATA SYSTEMS	1- 1	1 1/4	0	0.0
N	ELECTRONIC M & M	1- 4	3 5/8	0	0.0
O	FABRI-TEK	1- 1	7/8	+ 1/8	+16.6
O	GENERAL COMPUTER SYS	1- 2	1	- 1/8	-11.1
N	HAZELTINE CORP	4- 12	8 7/8	+ 3/8	+4.4
N	HARRIS CORP	34- 55	54 3/8	+1 5/8	+3.0
A	INCOTERM CORP	9- 20	10 3/8	+1 1/8	+12.1
O	INFOREX INC	3- 7	4 1/4	+ 1/4	+6.2
O	INFORMATION INTL INC	10- 18	11 1/4	0	0.0
O	INTEL CORP	59-109	64 1/2	+2 1/2	+4.0
A	LUNDY ELECTRONICS	3- 7	3 1/4	- 1/4	-7.1
O	MSI DATA CORP	3- 7	6 1/4	0	0.0
A	MILGO ELECTRONICS	15- 21	16 3/4	+1	+6.3
N	MOHAWK DATA SCI	3- 10	7	- 3/8	-5.0
O	PENRIL CORP	1- 3	2	- 1/8	-5.8
A	PERTEC CORP	3- 8	7 3/8	0	0.0
A	POTTER INSTRUMENT	2- 2	1 3/4	0	0.0
O	PRECISION INST.	5- 10	4	0	0.0
O	QUANTOR CORP	4- 6	4 1/8	- 1/8	-2.9
O	RECOGNITION EQUIP	6- 11	7 1/2	+ 1/4	+3.4
N	SANDERS ASSOCIATES	6- 11	8 3/4	+ 1/8	+1.4
O	SCAN DATA	2- 4	2	0	0.0
O	STORAGE TECHNOLOGY	9- 13	12	+ 5/8	+5.4
O	T BAR INC	5- 10	5 3/4	+ 1/8	+2.2
O	TALLY CORP.	4- 6	4 3/8	+ 3/8	+9.3
O	TEC INC	3- 6	6 1/4	+2 1/4	+56.2
N	TEKTRONIX INC	45- 67	59 3/4	+ 3/4	+1.2
N	TELEX	2- 5	3	0	0.0
O	WANGCO INC	11- 22	21 1/8	0	0.0
O	WILTEK INC	2- 2	2	- 1/4	-11.1
	SUPPLIES & ACCESSORIES				
O	ADVANCED SYSTEMS INC	1- 4	3 1/4	0	0.0
O	BALTIMORE BUS FORMS	3- 5	2 3/4	0	0.0
A	BARRY WRIGHT	6- 10	7 3/4	+ 1/4	+3.3
O	CYBERMATICS INC	1- 1	1/2	0	0.0
A	DATA DOCUMENTS	25- 42	28 3/4	+1 1/2	+5.5
O	DUPLEX PRODUCTS INC	13- 24	13 3/8	- 1/8	-0.9
N	ENNIS BUS. FORMS	6- 8	6 3/8	+ 1/8	+2.0
O	GRAHAM MAGNETICS	8- 13	9 1/2	0	0.0
O	GRAPHIC CONTROLS	13- 19	15	- 1/4	-1.6
N	3M COMPANY	53- 65	63 3/4	+1 1/8	+1.7
O	MOORE CORP LTD	38- 51	38 1/4	- 1/4	-0.6
N	NASHUA CORP	11- 18	16 1/2	- 1/8	-0.7
O	STANDARD REGISTER	15- 19	15 1/2	0	0.0
O	TAB PRODUCTS CO	5- 11	9	- 1/4	-2.7
N	UARCO	20- 25	20	- 1/4	-1.2
A	WABASH MAGNETICS	4- 8	7 5/8	+ 3/8	+5.1
N	WALLACE BUS FORMS	19- 25	20 1/4	0	0.0

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
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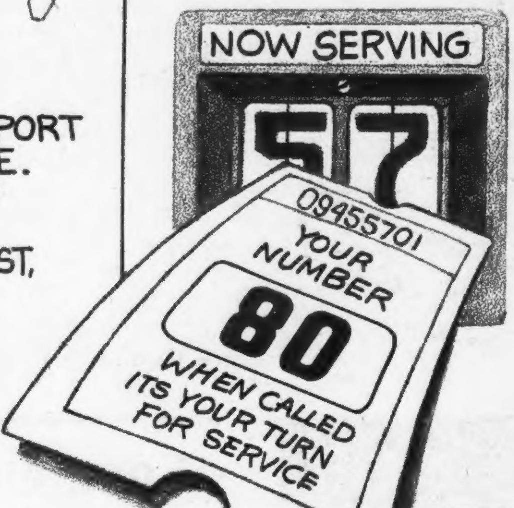

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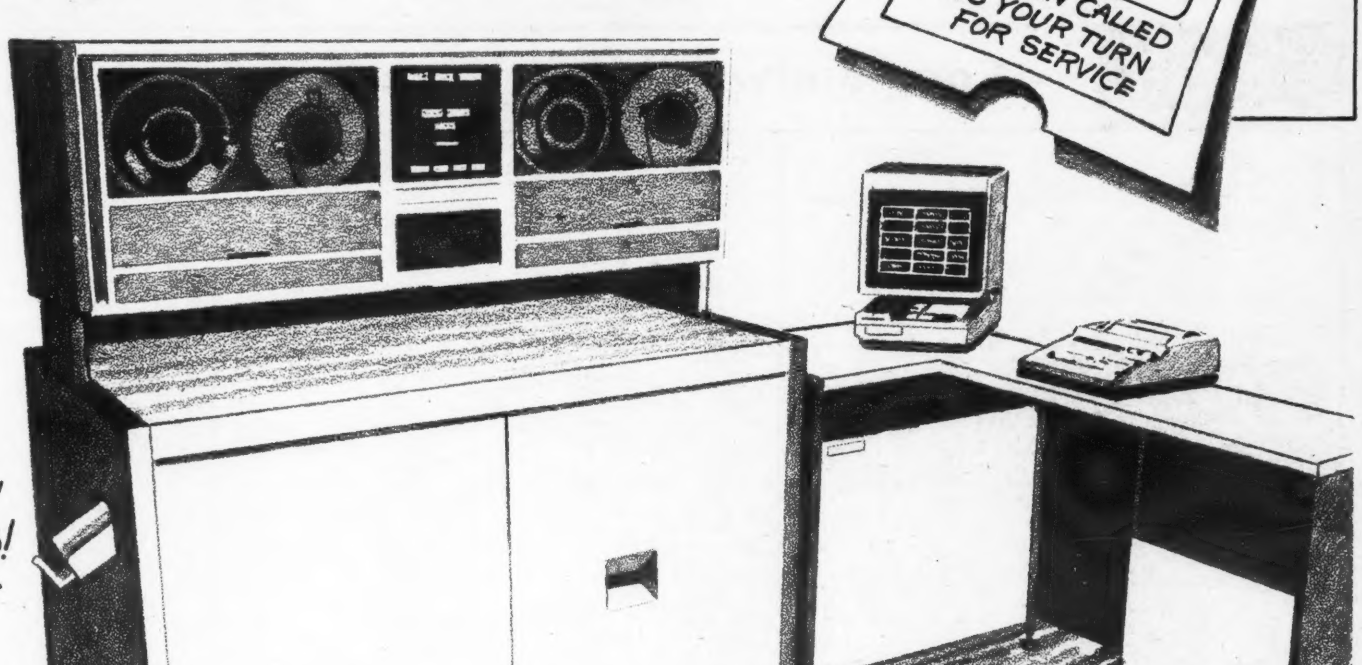

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